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LECTURES.

DUODENAL AND GASTRIC ULCERS.

A Clinical Lecture delivered at the Hospital of the University of Pennsylvania.

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I cannot altogether agree with those who think that, as regards the frequency of gastric ulcer, it is much more often suspected when it does not exist, than overlooked when actually present. But all are agreed as to the rarity of duodenal ulcers. Of this latter, it is doubtful if more than 70 authenticated cases are on record; while gastric ulcers, either cicatrized or open, are found in about 5 per cent. of persons dying from all causes. It may be very difficult to decide whether an ulcer which is believed to exist is gastric or duodenal in position. And this fact, coupled with the frequency of these ulcers, their dangerous character, and the great importance of proper treatment, leads me to report to you some recent cases.

It is true that you can diagnose gastric ulcer with confidence in cases attended with characteristic paroxysmal circumscribed epigastric pains extending through the back, coming on after eating, and disappearing only when the stomach is emptied by vomiting; with localized tenderness; with frequent vomiting, hyperacidity of the contents of the stomach, and with recurring hæmorrhages of bright blood in varying amount, with or without bloody discharges from the bowels. But it must be remembered that such ulcers may be latent and cause only slight, if any, symptoms until sudden and, as I have more than once seen, immediately fatal hæmorrhage, or else sudden perforation occurs. Or, indeed, the ulcer may be unexpectedly found at the autopsy of a case in which no significant symptoms had been present. Many cases are on record illustrating these statements. The same may be said of the duodenal ulcer; and I am reminded of the following case, which I saw but once, as it was sent to me, in 1881, by Dr. W. K. Hull, of Williamsport, for examination.

Case 1.—Duodenal Ulcer; Obscure Symptoms, Death from Perforation and General Peritonitis.

Mr. A. G., æt. 43, a dry-goods merchant of excellent personal habits, had for six years been complaining of occasional attacks of indigestion and pain (not of much severity) over the right side of the abdomen. His general health had not suffered much, though he had lost flesh moderately. His height was 5 ft. 9 in.; his weight 126 lbs.; he was of a light, spare build. He knew of no cause for his trouble, which I regarded as duodenal catarrh with hepatic congestion. He had never suffered a burn of any severity; nor any injury to that part of his body. He had been in the habit of eating rapidly without properly chewing the food. He took frequent Turkish baths, but only since the appearance of symptoms. He had never had jaundice. The urine was at times dark, but when I examined him it contained neither albumen nor sugar. There was no vomiting; no intestinal hæmorrhage; no local tenderness. The appetite was rather craving; the tongue but slightly coated; the bowels sluggish; the area of liver dulness slightly enlarged. The lungs and heart were normal; there was no marked atheroma of the superficial arteries.

I recommended the abandonment of Turkish baths; the constant use of a flannel belt around the body; a carefully restricted diet; and alternate courses of nitrate of silver and of iron, with belladonna and quinine.

I saw him on January 22. I heard from him in ten days that he was doing very well. On February 12, after a short and gentle ride on horseback, he was seized with atrocious pain in the upper part of the abdomen, followed by immediate collapse and rapidly fatal general peritonitis. The autopsy revealed an ulcer of the duodenum, which had perforated. It was seated on the anterior wall of the horizontal portion, about an inch from the pylorus. It was 3/8 inch in diameter, with sharp punched-out edges. There was no ulcer in the stomach.

I fear that it must be admitted that in this case it was impossible to make a correct diagnosis, as all the symptoms seemed adequately explained by the duodenal catarrh.

The next two cases I shall report were attended, on the other hand, with marked and alarming symptoms. They are specially interesting from their severity; from some unusual features; from the illustration they afford of the differential diagnosis of gastric and duodenal ulcer; and from their termination in recovery.

Case 2.—Gastric Ulcer; Gastralgic Pains; frequent Vomiting; Hæmorrhage; Septic Parotitis; Recovery after Desperate Illness.

Mrs. X., æt. 39, was seen in consultation with Dr. T. V. Crandall. She had been suffering for many months with uterine trouble, and had been subjected to an operation for laceration of the cervix, following which there was a prolonged state of poor nutrition and neurasthenia. Her vitality and circulation were greatly depressed. She then suffered for three months from severe paroxysms of pain of gastralgic character, recurring frequently and irregularly. There was no vomiting, but progressive decrease in power of taking and digesting food, with quite rapid loss of flesh and color. There was also tenderness over the stomach. At the close of this time vomiting began, and almost at once became very frequent and proved uncontrollable by ordinary remedies. I saw her at this time. She was immediately put to bed, upon an absolute milk diet, with repeated small blisters over the stomach, and with minute doses of nitrate of silver internally. Rectal enemas were used from the first. The vomiting was not, however, controlled either by the silver nitrate, or by any other remedy that was used; opium by the rectum was required to relieve pain and to secure rest, but it produced no good effect upon the vomiting. It was also necessary to use hypodermic injections of morphia and atropia quite frequently. The tongue became parched and brown and deeply fissured; the anæmia grew intense, and there was occasionally oozing of blood from the nose, and from the gums. Vomiting of small quantities ot bright, fresh blood occurred repeatedly. At the close of ten days slight febrile action set up, the temperature rising to about 101° at night. She became so emaciated and exhausted, that it seemed that death was imminent. She was then attacked with parotitis, undoubtedly septic in character, first upon one side and then upon the other. Fortunately this ended in resolution. All internal medication was abandoned, and for many days no attempt was made to administer food by the mouth. She was anointed assiduously with sweet oil, and for four weeks was maintained exclusively by rectal enemas. Veratria ointment was used externally, in conjunction with morphia hypodermically, and opium by the rectum to control suffering. Despite her desperate condition she began to improve; vomiting grew less frequent, and blood ceased to be ejected. The fever subsided. As resolution of the parotitis advanced, she became able to bear teaspoonful doses of skim milk. This was cautiously increased, and she was kept upon an absolute milk diet for about three months. She was then able to be lifted from bed, and moved carefully to the seashore. After seven weeks of illness, recovery was complete, but was marked by protracted and obstinate constipation with troublesome rectal fissure.

Case 3.—Ulcer, Probably Duodenal; Gastralgic Pains; Persistent Vomiting; Severe Repeated Hæmorrhages altogether Intestinal; Circumscribed Tumor; Recovery after Desperate Illness.

Mrs. P., æt. 38. Was seen in consultation with Dr. H. A. M. Smith, of Gloucester City, N. J. She had enjoyed general good health, but during the autumn of 1888, had been overtaxed and worried greatly in connection with business affairs. She was attacked December 14, with severe gastralgic pain, which recurred regularly every afternoon at about the same hour. Vomiting began on December 29, and at once became frequent and was attended with marked exhaustion, so that she took to bed on January 1, 1889. In spite of various remedies and careful regulation of diet, the vomiting persisted. It presented itself rather as a frequent raising of small quantities of dark colored mucus, which at times had a purulent appearance. There were rapidly progressive emaciation, weakness and anæmia. On February 5 she had a large hæmorrhage from the intestine. The blood was dark, but not offensive. This caused extreme debility. Between that date and February 14, there was continued discharge of blood from the bowel, including six large hæmorrhages. There was not a single drop of blood vomited.

I saw her first on February 5. She was profoundly anæmic, and partially collapsed. During the ensuing ten days it seemed scarcely possible that she should survive. Examination showed tenderness to the right of the median line, and there was a distinct circumscribed induration below the lower edge of the right ribs, corresponding to the position of the duodenum. This could be outlined as a painful lump of about two inches in diameter. There was no jaundice at any time. She continued to raise frequently small amounts of dark mucus. There was no melæna after Feb. 14. Fortunately the rectum continued retentive, and the nutritious enemas were evidently absorbed. She remained in a desperate condition for nearly three weeks, and even then her improvement was so slight and gradual, that her recovery seemed doubtful for some time longer. The lump described above gradually decreased in

size, and now, May 1, is no longer perceptible. She continued to eject mucus in decreasing amounts until early in April, since when it has stopped entirely. The stomach rapidly regained its digestive power, and she is now able to eat quite freely and without any distress, meat, vegetables, bread and butter. All is well digested, and the bowels are moved daily with a healthy stool. As soon as she sat up, and her legs became pendent, she suffered very severely from numbness and anæsthesia, with a distressing sense of restlessness in them; there was no œdema. This has gradually disappeared under the use of veratria ointment with bandaging, and she is now able to walk about her room quite freely. In the treatment of this interesting case, rectal injections were used from February 1, until the last week in March. They occasioned no special inconvenience, and on no occasion did they induce an evacuation. For two weeks prior to the first hæmorrhage no nourishment whatever was retained. Reed and Carnrick's liquid peptonoids was then administered in small and frequently repeated doses. It proved acceptable and for some time was the chief reliance in feeding her, and she still continues its use. The rectal injections were given every four hours, and consisted of 8 ounces of peptonized milk, and of peptonized beef-tea alternately. Nitrate of silver was ordered on February 6, and its use was continued until 16 grains had been taken, grain ¼ t.d. being used. She then took oxalate of cerium grain 1½ four times a day for two weeks, and then resumed the nitrate of silver in small doses, $\frac{1}{10}$ t.d., which has been continued until the present date. Her complete recovery now seems assured.

It cannot be doubted that ulcer existed in each of these cases, as severe recurring pain, tenderness, vomiting, and finally hæmorrhage, were present. The interesting question arises whether, in Case 3, the position of the ulcer was gastric or duodenal. It is evident that we cannot place much reliance upon the location or character of the pains. In some cases of gastric ulcer there is severe paroxysmal pain strictly localized in a circumscribed spot in the epigastrium, coming on soon after eating, increased by pressure, and disappearing as soon as the stomach is relieved of its contents. But there are many cases, of which Cases 2 and 3 are good examples, where the paroxysms of pain assume the usual diffuse gastralgic type. It is comparatively rare that there exists such definite localized pain as will enable us to determine accurately the site of the ulcer. Nor can it be said, as will be shown in Case 4, below reported, that the character or frequency of the vomiting is conclusive. Vomiting may be absent from first to last, in either gastric or duodenal ulcer. This is, to be sure, rare. It is the rule more constantly in gastric than in duodenal ulcer that vomiting occurs repeatedly and soon after the ingestion of food. The argument is vitiated by the impossibility of determining the amount of coexistent gastric catarrh. In all the above cases this was present in marked degree; and especially in Case 3 did the character of the ejecta indicate that the vomiting was chiefly due to catarrh of the mucous membrane.

Not even when hæmorrhage occurs can we always decide. Still, it is a general rule that, in gastric ulcer, some of the effused blood—unless it escapes very slowly and all passes into the intestine, is vomited; and that on the other hand, in duodenal ulcer, unless the blood escapes very rapidly, so as to overcome the pyloric resistance, or unless the ulcer is seated very close to the pylorus and is accompanied with pyloric incompetence, the blood is discharged by stool. Case 4 will illustrate the latter statement; and Case 3, judged by this rule, would seem to be also one of duodenal ulcer. There are too many exceptions to permit a dogmatic assertion; yet here this view is confirmed by the existence of a small but distinct tumor in the duodenal region. It is important to remark that, though not a common symptom, tumor may be present in simple ulcer, either gastric or duodenal, and more frequently in the latter. The tumor is due to peritoneal exudation and adhesions, associated, in old cases, with thickening of all the tissues involved.

Even when no thickening or swelling can be detected by palpation, it is common enough to find a circumscribed spot of tenderness on pressure, which may be attributed to the sensitive state of the peritoneum outside the base of the ulcer, and which therefore may serve, when present, as a guide to the position of the ulcer. Great care is required to avoid being misled by mere epigastric hyperæsthesia, which is so common; and by tenderness of the nerve points in the abdominal walls. The position of the small tender swelling in Case 3 indicated that it was due to local peritonitis about the first portion of the duodenum; and the lesions in Case 4 showed clearly that there probably had been a distinct sense of resistance and thickening, if not of actual tumor, in the same region. Upon the whole the evidence seems to indicate that the ulcer in Case 3 was in the duodenum. There had been no severe pain —but this is merely of negative value; though it is far more usual to have recurring spells of varying intensity, as in Cases 1 and 4. There had been no jaundice, which occurs, as would be expected, in some cases of duodenal ulcer, from occlusion of the bile duct from extension of catarrh, or from thickening of the duodenal tissues. But this symptom is often absent, as in Cases 1 and 4. It should be noted also that the restoration of the tone and activity of the stomach was, in Case 3, more prompt and complete than is

seen ordinarily in cases of gastric ulcer ending in recovery. Before leaving these cases, the fever in Case 2 should be carefully noted. Simple ulcer of the stomach or duodenum is not often attended with fever. Still, this may develop from the occurrence of local peritonitis; or it may be septic, as it apparently was in this case. The complicating parotitis confirms this. The fever which occurred during the last few days of life in Case 4 was too brief and depended upon too many factors to have any special significance. The case is, however, full of clinical and pathological interest.

Case 4.[1]*—Duodenal Ulcer; Gastric Catarrh of long Standing; Persistent Vomiting; Gastralgic Pains; Repeated Copious Discharges of blood by Mouth and Rectum, followed by Death from Sepsis and Exhaustion.*

I was called to see Mr. F. on the morning of Saturday, March 2, immediately after an enormous hæmorrhage from the stomach, which had been followed by almost fatal collapse. He was 32 years old, and a man of fine physique, who had formerly for many years indulged excessively in athletic sports. It was believed by many that he had often overtaxed himself. He had also been careless in his habits of living, especially in regard to his meals, which were irregular, and eaten hastily. He had used wine freely. He had never met with any serious accident, nor received any severe burn. For fully five years he had suffered with violent gastralgic attacks, recurring frequently and irregularly. The pain was referred to the epigastrium; not rarely pressure seemed to afford relief. His spells of pain were not brought on directly by food; and he had learnt by experience that the rapid drinking of large quantities of cold milk would afford temporary relief. It was clear that gastric catarrh had long existed. Vomiting became a symptom three or four years ago, and had continued quite frequent. It would usually occur in the morning, when he would bring up without much effort considerable amounts of mucus and acid liquid. During the day, however, he would not infrequently raise small quantities of liquid, so acid that it would bite the mouth. There had never been any jaundice. Local tenderness was not complained of, but there was often distressing abdominal distension. He had been under the treatment of several physicians, but had derived no special advantage from any remedies. Most relief was obtained from restricted diet largely composed of milk. Noting this, he had continued to use milk in large quantities, especially as excessive thirst was another prominent and distressing symptom in the case. He also ate a considerable amount of solid food, while at the same time he drank as much as eight quarts of milk in twenty-four hours, taking it for the most part very cold, and in very large draughts. At times his thirst was so intense that he would raise the pitcher to his lips and drink as much as a quart at a single pull. He lost flesh moderately; had a bad color; and began to tire more readily. There had never been any blood vomited until the sudden large hæmorrhage above mentioned. He was at his office desk when this occurred, and fell upon the floor in syncope from the shock. The amount of blood which escaped cannot be estimated accurately, but an experienced physician who saw him immediately afterward says it was certainly over a quart. I saw him for the first time two hours after the hæmorrhage. He was deathly pale, with a miserably small and running pulse; and was complaining bitterly of intense thirst. There was no vomiting; the bowels had not been moved; the belly was moderately distended. He had taken a large dose of Monsell's solution. Nutritious and stimulating enemas were given. Digitalis was injected under the skin; smaller doses of the astringent were continued internally. He reacted gradually through the day, and by night seemed much better; but early on Sunday morning became restless and distressed, and soon had another enormous discharge of blood from the stomach. This again was certainly over a quart, and was soon followed by a large discharge of black tarry blood from the bowel. Alarming collapse again ensued. Monsell's solution was repeated; a bag filled with cracked ice was bound tightly upon the epigastrium; hypodermics of ether and digitalis were administered. He reacted imperfectly toward evening. No further hæmorrhage occurred. But during Monday he sank in spite of all efforts, and at 1 o'clock Tuesday morning, in consultation with Dr. J. William White and Dr. Judson Daland (whom I had placed in constant attendance upon the case), it was decided to transfuse. Dr. White injected into the left median basilic vein 32 oz. of hot saline solution, composed of sodium chloride ℥ij; potassium chloride gr. xij; sodium phosphate gr. vi; sodium carbonate ℈ij; alcohol ℥ss; distilled water, q. s. ad Oij. The temperature of the liquid injected was 110° F.

The patient's condition was desperate when the injection was given. So exsanguine was he that when the vein was opened, it lay collapsed on the grooved director with not even an oozing of blood. Within a few minutes after the injection, blood began to flow from the distal part of the vein and it soon became necessary to ligate it. Its immediate effects were gratifying, and were especially marked upon the pulse, which became slower, stronger and fuller. His thirst was constant and intense. The transfusion did not help it. The good influence of the trans-

[1] This is the same case which was reported partially in the Medical and Surgical Reporter for April 20, 1889.

fusion did not last many hours, and, in fact, its effect was so transient that at no time until the occurrence of death upon the following Saturday, March 9, did we feel encouraged to repeat it. The stomach continued retentive. The patient's demands for liquids were incessant and imperative. They were resisted with difficulty, and only small quantities of milk and lime water and of a mixture of one part of champagne with two of Apollinaris water (kept frozen in an ice-cream freezer), were given alternately. Rectal enemas of peptonized liquids were given at intervals of four hours. The rectum proved unusually tolerent. It appeared probable that all the enemas were absorbed, although from time to time large quantities of horribly offensive decomposing blood were discharged from the upper bowel. Listerine was added to the enemas as a disinfectant. The medication was exclusively by hypodermic injection. Morphia, atropia, digitalis and ether were used with great discretion and with excellent result by Dr. Daland, according to the indications from hour to hour. On Wednesday, March 6, the temperature began to rise, and on Thursday and Friday it ranged from 101°.5 to 102°.5. It sank again on Saturday prior to death. No local cause for the fever could be determined; it seemed chiefly septic, though intestinal irritation played a part. The pulse continued extremely small and weak, and rapid.

Auscultation showed a distinct systolic murmur, heard over the sternum. This was regarded as at least in part organic, and due to disease of the aortic valves. The urine was examined several times after Tuesday, the 5th. It contained a very small amount of albumen; no sugar. There were a few leucocytes, but not sufficient to account for the albumen. There were no tube casts or blood. Death occurred gradually from exhaustion and heart failure.

Autopsy showed moderate enlargement of the heart. There were short fibroid vegetations on the free surface of the aortic valves. No other cardiac changes were present. The lungs were normal. The diaphragm was unusually thick and powerful. The spleen and pancreas were normal. The kidneys were very large; there were two small retention cysts on the surface, but no serious organic change. The liver was enlarged, weighing 4½ lbs. The gall bladder was distended with 5 ozs. of dark bile; the bile ducts were normal. The stomach was greatly dilated, its capacity being over 3 quarts; its walls were thickened, and the mucous membrane showed evidences of chronic catarrhal inflammation. No ulcer or cicatrices were found. The duodenum was tightly adherent by old and firm adhesions to the liver, the gall bladder, and adjoining parts. It was greatly distended and its walls were softened, so that they readily broke upon traction. Upon its anterior face, about ½ inch from the pylorus, there was a large irregularly round ulcer, with a diameter of almost 2 inches. The tissue of the duodenal wall at this point was much thickened and fibroid. About the centre of the ulcer the pancreatico-duodenal artery was ulcerated through, each portion of the vessel containing a soft thrombus. The ulcer was shallow, with slightly terraced edges. At about the beginning of the ileum there was a small fibroid growth projecting into the bowel. The stomach and small intestines contained no blood, but, in spite of the frequent and large bloody discharges during five or six days, the colon still contained a large amount of black fæcal matter and of decomposing blood. It is evident, therefore, that at the time of the discharge of blood by vomiting, there was also an enormous amount of blood which passed down into the bowel.

There are many points of interest in this case which, for want of space, cannot be considered. Gastric catarrh had lasted so long that the patient had become accustomed to symptoms which should have caused constant alarm. The ulcer seems never to have been suspected by any of the numerous physicians he had consulted, and it is, of course, idle to speculate as to its duration, or as to whether it might have been recognized if the case had been studied carefully with suspicion alive, as it should always be where recurring pain and vomiting occur. His straight abdominal muscles were enormously developed, but the lesions about the duodenum indicated that, with proper care, the local thickening and hardening might have been detected.

All of these cases illustrate the difficulty of the treatment of simple ulcer of the stomach or duodenum. It is clear that, whenever suspicion is aroused as to the existence of ulcer, treatment must be prompt, rigid and persistent. Even when symptoms are mild, the gravest danger is lurking in the case. Taken thus, most cases recover. Strict rest; rigidly regulated feeding; full courses of nitrate of silver, alternating with oxalate of cerium, with bismuth or with copper, seem the most important elements of treatment. Careful attention to coexisting gastric catarrh by diet, by mild mineral waters, or even by lavage, may be demanded. Complications and accidents must be met promptly. Even the gravest cases may terminate favorably, after recovery seeming wellnigh impossible; so that the prognosis must not be a hopeless one as long as life lasts. The disease affords a good field for, and at times most imperatively demands, judicious hypodermic medication and rectal alimentation. The value of the latter cannot be exaggerated. In very bad cases, it may be associated with systematic inunction, and, as shown in Cases 2 and 3, life may be thus sustained for long periods, until happily the progress of cicatrization permits the resumption of feeding by the mouth.

THE TREATMENT OF ASTHMA.

Portion of a Lecture delivered in the Regular Course of 1888-89.

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For the relief of asthma an almost countless number of drugs have been suggested and tried. It is not my purpose even to enumerate these, but to call attention to those that are to day most frequently employed with success and to those with which I have had personal expererience. Treatment of asthma is prophylactic and also is addressed to the immediate relief of the dyspnœa. In order to understand the mode of action of drugs in asthma, it is necessary to keep in mind its causes and the mechanisms within the body that are called into play in producing the phenomena of the disease. It is true that the bronchial tubes are congested during the dyspnœic attacks, but it is not probable that this is the cause of the difdifficulty of breathing. A true spasm of the bronchioles constitutes the essential change. This spasm is produced by contraction of the muscular tissue in the bronchial wall when excited by the nerves supplied to it. The initial irritation of the nervous system arises in only a moderate proportion of all cases within the bronchial tubes. In some cases of bronchitis, and in some cases of uncompensated heart disease with passive engorgement of the bronchial vessels the afferent nerves of the bronehi are irritated, and thus reflexly the efferent nerves and finally the bronchial muscles are excited. Immediate irritation of the efferent nerves may be the cause of spasm of the bronchi in these cases, although the action of drugs points to a reflex cause. More frequently the initial irritation is in some distant organ, whence reflexly the muscular nerves of the bronchi are excited. A common illustration of this mode of origin of bronchial spasm is seen in the cases of hay and rose fever that are complicated by asthma. The initial irritation is within the nose. In rare cases we find the efferent nerves to the bronchi excited by mental changes or changes originating within the central nervous system. In mild uræmic poisoning asthma occasionally occurs. Whether, in these cases, the uræmic poison primarily irritates the central nervous system and thus provokes the attack, or the peripheral nerves and bronchial muscles, is not known, but the former explanation seems probable. The mechanism, as you will notice, essential to the production of most asthmatic attacks, consists of the afferent nerves and primary irritation of their termini, of nerve centres, probably in the medulla, by which the irritation of the afferent nerves is reflected to the efferent nerves and, lastly, the efferent nerves and their endings in the muscles of the bronchi. For convenience we may name the first of these factors, the afferent nerve endings, the *source of irritation;* the second, the nerve centre, the *reflector;* and the third, the efferent nerves and bronchial muscle fibres, the *focus of irritation.*

An analysis of the mode of action of the drugs that are most successful in asthma shows that in one of three ways they relieve the spasm. We may therefore place them in three groups. These groups are characterized by the mode of action of the drugs upon the nervous mechanism involved in asthma. The first includes those that affect the source of irritation and thus prevent the development of an attack; the second those that benumb the nerve centre or reflector of irritation; and the third those that act upon the focus of irritation.

In the first group we must place a very promiscuous collection of drugs, since the source of irritation may be in almost any part of the body. We find, therefore, in this list, those medicines that allay irritability of nasal, pharyngeal, bronchial and gastric mucous membranes, and also those that allay irritability of the womb and some of the parenchymatous organs.

A very considerable number of cases have for the source of irritation the nasal mucous membrane. The irritant may be a foreign body in the air that is breathed, or a chronic inflammation of the mucous membrane, or a polypoid or other growth. Prophylaxis is readily applied to the cases of hay fever, in which foreign bodies in the atmosphere are the exciting cause and the nasal mucous membrane the source of irritation of the disease and complicating asthma. A change of climate and therefore of air is curative. The localities in this country that afford most perfect exemption are the White Mountains, Mackinac and many localities along the shore of Lake Superior, and numerous places in the more elevated parts of the Rocky and other mountainous regions. A residence in the heart of a thickly populated city will often grant to individual cases immunity, although they may suffer severely in neighboring suburbs. As these attacks are most likely to occur at certain seasons, especially in August and September and less frequently in June, temporary changes of abode at these times will usually give to those who are liable to the attacks exemption. Many of the afflicted cannot take advantage of such prophylactic treatment. It is possible, usually, to lessen the severity of attacks and sometimes to prevent them by appropriately applied medicinal treatment. There is necessary for the production of this asthma not only the specific irritant in the atmosphere, but a peculiar sensitiveness of the nerve endings which constitute the source of irritation, and possibly also of the nerve centres. Advantage can be taken of these facts in mitigating and preventing the disease when a change to a pure unirritating air is impossible. Thus, in hay fever, local anæsthetics applied to the nasal mucous membrane will frequently

hold the disease in abeyance or at least mitigate it. Of the remedial agents that can be topically applied for anæsthetic effects, cocaine is the most important. A 5 to 10 per cent. solution may be sprayed into the nose through the anterior nares and, when necessary, also applied to the posterior nares through the mouth. Or it can be employed by insufflating a powder composed of it and some bland diluent. A cocaine ointment may be used, a little being placed in the nostrils and allowed to melt and trickle backwards so as to anoint the mucous surfaces. This method is less efficacious than either of the others, since the drug is not applied so uniformly to all parts of the nose. It must be remembered in regard to cocaine that, if used in small amounts often, or in strong solution less frequently, symptoms of intoxication may be produced. I have rarely found it necessary to use preparations of more than 4 per cent. strength. Often a few applications of cocaine will greatly aid in discovering the source of irritation, for cases occur in which we suspect the source to be in the nose or throat, and if applications to these parts allay the dyspnœa, we may feel that our suspicions are well founded.

As a topical application morphia is also useful. It acts less promptly than cocaine, but often its effects are more lasting. A favorite formula of mine consists of 4 per cent. of cocaine, 2 per cent. of morphia, mixed with some inert powder or with water, according as I wish to make applications by insufflating or by spraying.

To prevent asthmas that result from the existence of chronic inflammation or tumors within the nostrils a destruction of the irritating tissue must be effected. A temporary relief can often be obtained by the use of the local anæsthetics just mentioned. Rarely the source of irritation is found in the pharynx or larynx. In such cases the irritant is usually a morbid growth or a chronic inflammation with hypertrophy. Such lesions must be treated just as are their analogues in the nasal cavity.

We must place in this miscellaneous group also the various expectorant and anodyne mixtures that are employed to allay laryngitis, trachitis or bronchitis, since these inflammations are frequent causes of asthma, and therefore their cure will give exemption. The efficacy of such mixtures is greatly enhanced by combining with them drugs that belong to the second group, or those that allay the excitability of the reflex centres.

In the same way asthma which accompanies uncompensated valvular disease of the heart is relieved by digitalis and similar drugs. They strengthen the heart's action and give greater tone to the blood-vessels, and thus reduce venous hyperæmia of the lungs and bronchi. These remedies accomplish more for such asthmatics than those that relax muscular spasm. They do good by stopping the irritation at its source. Cases in which the source of irritation is in the organs of the alimentary tract are relieved, and often permanently cured, by treatment of the primary lesions. Occasionally a woman is found who is persistently troubled with asthma during pregnancy, although free from it at other times. Absolute relief is, so long as pregnancy lasts, usually impossible. I have, however, seen most marked benefit obtained by the persistent use of viburnum prunifolium. This drug without doubt lessens the irritability of the uterine tissues, and thus diminishes the irritability of the source of irritation of the asthma.

The second group of drugs includes those that act on the nerve centres and thus inhibit reflex action. The most important of them are chloral, chloroform, ether, opiates and bromides. When dyspnœa is intense a few whiffs of chloroform will give relief promptly. As the relief is often not of long duration and as the drug cannot with safety be left in the hands of the sufferer, its range of usefulness is limited. Of this group, chloral is the safest and most universally useful. If the asthma is wholly paroxysmal, it is best administered in one or two full doses rather than in several smaller ones. Often 1 gram or 1½ grams, given in sweetened water, will not only relieve present dyspnœa but produce an effect sufficiently lasting to suppress the attack. In cases that occur as complicating bronchitis, trachitis or laryngitis, and in which the dyspnœa is not paroxysmal only, but to some extent is persistent, since the source of irritation is constantly excited, the best effects are to be obtained by the repetition of smaller doses of chloral or of bromides, or of opiates, or of mixtures of all these with expectorants. In this way the nerve centres are constantly inhibited or restrained in their activity, so that the paroxysms of exacerbation are held in abeyance and time is gained in which to overcome the primary inflammation. A formula that I have frequently employed with marked benefit in such cases is the following:

℞.	Chloral	grams 15.00.
	Ammonii muriatis.	" 10.00.
	Morphiæ muriatis.	" .20.
	Antim. et pot. tart.	" .15.
	Ex. grindeliæ robustatæ fl. .	" 45 vel 60.00.
	Aq. vel syr. glycyrrhiz q. s. ad.	" 120.00.

Give 1 teaspoonful every three to six hours in sweetened water.

Morphia and the bromides are less generally useful than chloral. The bromides, given steadily in rather large doses, are serviceable when the source of irritation is the larynx or pharynx, for they not only act favorably by lessening the excitability of reflex centres, but also have the peculiar property of benumbing the nerve endings in the mucous membrane of the larynx and pharynx. The dose should be large, for example, 1½ to 3 grams of the bromide of sodium.

There is another class of remedial agents which

it is difficult to classify with certainty, for our knowledge of their physiological action is imperfect, and the results of researches are not completely harmonious. The drugs to which I refer are grindelia robusta, senicio aureous, quebracho, lobelia, tobacco. It seems probable, however, that as remedies for asthma they can be placed in this second group. The last of these we know produces its nauseant effects chiefly by acting on the nauseating centre in the medulla. Death from tobacco poisoning is due to paralysis of respiration. The end organs of the motor nerves are first affected, then the nerve trunks, and finally the respiratory centre. The physiological action of lobelia is very similar to that of tobacco. When lobelia is used in asthma it must be given in doses of from 2 to 4 cubic centimetres of the tincture, and repeated every two hours or oftener until vomiting and relief are produced. Mitigation of the dyspnœa usually corresponds with intense nausea and is greatest after vomiting.

Tobacco is useful only in mild cases, and when used by persons not accustomed to it. From the apparent relation of the therapeutic effect to the nausea, the action of the drugs seems to be due to an influence which they exert upon the respiratory and vomiting centres. It is not possible that their therapeutic action is due to paresis of the motor nerves, for it is only by overwhelming doses that these nerves are paralyzed. Tobacco and lobelia do not affect the muscle fibres. It must be remembered, too, that during intense nausea from any cause respiration becomes deeper and more forceful. From all these considerations, I feel inclined to ascribe their favorable action to the influence they exert over the reflex act at the nerve centre.

Quebracho has a peculiar effect upon respiration in healthy persons. It slows it and prevents panting when hurried movements are made. At the same time it retards the heart. Gutman has shown that its active principle, aspidospermine, produces death by poisoning the respiratory centre.

We know less of the physiological action of grindelia and nothing of senecio. Grindelia produces death only in very large doses, and then by paralyzing respiration. In smaller doses it slows the respiration and the heart.

The effects of lobelia must be carefully watched, for large doses have produced alarming symptoms. For this reason I have employed it rarely, but grindelia I have administered frequently and quebracho and senecio less frequently, although enough to feel confident that to some extent they are useful. They are so much less efficacious than some other remedies at our command for the relief of the dyspnœa that I rely upon them not at all for its treatment, but rather as adjuvants for warding off the recurrence of the paroxysms.

Grindelia and quebracho are probably mildly expectorant, and through their bitterness tonic to the stomach. I have seen several cases apparently exempted from severe attacks by senecio aureous only. The drug was not given during dyspnœa, but while the paroxysms were threatening and at a season when the patients were usually afflicted by them. By the continued use of it for several weeks an actual outbreak was avoided. Grindelia and quebracho are the most efficacious of these remedies. But their bitter and otherwise unpleasant taste limits greatly their eligibility. Their fluid extracts can be administered in doses of 2 to 4 cubic centimetres.

The third group of drugs embraces the nitrites and nitro-glycerine. Amyl nitrite administered by inhalation has been used in asthma for a number of years. Nitro-glycerine has been used less frequently, and the nitrites of soda and potash still less. Prof. Fraser, of Edinburgh, has given us the most trustworthy information as to the relative value of these drugs in asthma. They all relieve the spasm, and with wonderful promptness. The effects of amyl nitrite are very transitory. Nitro-glycerine, when given in doses of sufficient size, is apt to provoke congestive headache. The nitrite of soda he found gave quite as prompt relief as the others, was less likely to provoke headache and produced more enduring effects. The more purely spasmodic the case the more efficacious are these drugs. Dr. Fraser found that in two or three minutes after the administration of even half grain doses of the nitrite of soda, marked relief was noticeable in the patient's breathing and a lessening of the crowing and piping in the chest. In ten minutes or less, as a rule, the patients feel comfortable. It was rare that it was necessary to repeat the dose in any single attack. The good effect of these drugs, when administered in the usual therapeutic doses, is undoubtedly chiefly due to to their action upon the muscle fibres of the bronchial tubes, irritability of which they lessen or temporarily destroy. In other words, they act upon the focus of irritation. In less degree they may diminish the irritability of the motor nerves. This is a somewhat doubtful effect of therapeutic doses, although it can be obtained from large doses. Very large doses also lessen the excitability of the spinal cord and higher nerve centres. In using the nitrite of soda, which from considerable personal experience I can commend, it must be remembered that there are two preparations in the market, a "commercial" and a chemically pure. The former can be given in doses of from 5 to 10 grs. (gms. .3 to .6), and 20 grs. (gms. 1.3) have been given without harm.[1] The therapeutic dose of the chemically pure drug is from 1 to 5 grs. (gms. .06 to .3). Headache, although of rare occurrence from the nitrite of soda, is not always wanting. During the present fall, in the case of Mrs. C., I directed 6 decigrams of the commercial nitrite to be taken. It relieved

[1] "Therapautics, its Principles and Practice," by H. C. Wood.

the dyspnœa promptly, but produced an intense though temporary headache. While the most beneficial effects are obtained in the most frankly paroxysmal cases, I have derived marked benefit from the continued use of these remedies in asthmas that complicated bronchitis and that were to some extent persistent. In such cases I have combined the nitrite of soda with the usual expectorant and anodyne treatment of bronchitis. I have administered it in 18 to 30 centigram doses every three to six hours. While it does not influence inflammation or allay cough, it seems to lessen the dyspnœa and prevent the paroxysmal exacerbations which recur in such cases.

Atropia, stramonium and hyoscyamus constitute another series of drugs that are analgesic to the focus of irritation. The two first are the ones most frequently used in this disease. They cause relaxation of the bronchioles, in part by benumbing their involuntary muscular fibres and in part by lessening the sensibility of their terminal nerve fibres. While efficient in aiding to give relief, their side effects are so marked and often so disagreeable that they cannot be used in efficient doses. The action of the drugs is so well known that I need hardly say that these side effects are dryness of the mouth and throat and heat and redness of the skin, dilatation of the pupil, disturbed vision and, in very susceptible patients, mental disturbances. I have rarely employed these remedies in the full doses that are necessary in order to obtain the best results in asthma, but frequently use them in smaller doses to reinforce the action of other drugs. A favorite and very efficient combination for the relief of asthmatic dyspnœa I have found to be:

R.	Chloral	grams	20.
	Sodium nitrite	"	3.
	Tinct. stramonium	"	10.
	Elix. simpl. q. s. ad	"	60.

Take 1 teaspoonful every four hours in water.

Not only do these remedies act favorably when they are taken by the stomach, but the inhalation of the smoke of the crude drugs is often of the greatest benefit. Stramonium leaves are used in this way most frequently. The leaves are smoked either when rolled into cigarettes or from a pipe. Their efficacy is enhanced by first soaking them in a saturated solution of nitre and subsequently drying them for use; or they may be mixed with or rolled in bibulous paper that has been thus saturated. The nitre is decomposed by the heat and a nitrite is formed which aids in relieving the dyspnœa. There are numerous proprietary cigarettes and pastels for asthma, the basis of whose composition is stramonium and nitre.

Rarely examples of a peculiar form of asthma are seen in which the source of irritation seems to be mental or central rather than peripheral. I refer to those cases in which the dyspnœa is caused by fear, and to those in which it is excited by certain but the most varied localities or odors. If these susceptible persons are not conscious of being in the locality of the noxious object no respiratory discomfort is experienced. These are cases of mental idiosyncrasy, and usually occur in persons of an hysterical temperament. It is in such cases that valerian has sometimes been used with benefit.

Asthma occurs as a frequent complication of Bright's disease. It is caused in two ways by this disease. In some cases it arises from a complicating bronchitis, but more frequently from uræmic poisoning. When bronchitis is the cause it must be treated upon the principles already explained, but when uræmia is present a different method must be employed. The measures that are most beneficial are those that aid in eliminating the poison. Diaphoretics, diuretics and cathartics are therefore indicated. The first of these classes of drugs gives the most prompt relief. Of diaphoretics, pilocarpine administered subcutaneously is the most prompt in its action. The uræmic poisons are largely eliminated by the copious diaphoresis that it produces. It is necessary to prevent their reaccumulation. This is best accomplished by diuretics and, when they are not sufficient, the coincident use of cathartics. Cathartics and the preparation of jaborandi must be employed with much caution when a patient is debilitated or has heart weakness.

In the intervals between the dyspnœic attacks the iodides are often prescribed, and with marked benefit. Unfortunately, they do not uniformly ward off or mitigate the paroxysms. Clinicians have not yet discovered the precise indications for their use. The cases in which I have most uniformly derived good results from their employment have complicated chronic bronchitis. It is probable that their good effects are largely due to the property which they possess of promoting reabsorption of cellular exudates into inflamed tissues. The iodide of soda is the most eligible preparation for persistent employment. It should be given for weeks and often for months.

There have been observed rarely cases in which the asthma seemed due to direct irritation of the pneumogastric nerve by enlarged bronchial and cervical glands. In a few of these cases the iodides are said to have done good by reducing the glandular enlargement.

Arsenic is also frequently administered persistently in the intervals between paroxysms. How it acts we do not know. It is a remedy, as you remember, that is employed for the relief of many paroxysmal neuroses. The Fowler's solution, administered in gradually increased doses up to the point of toleration and then persistently continued, is perhaps the favorite prescription. Personally I have not been gratified with the results that I have obtained from its use.

65 Randolph Street.

ORIGINAL ARTICLES.

MICRO-ORGANISMS; AND THEIR RELATION TO DISEASE.

Read before the American Academy of Medicine, and approved by the Council for publication.

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The rôle of the microörganisms called bacteria is at present probably occupying the attention of more scientific men than any other subject in modern science. Great numbers of observers are at work on both continents in the solution of the *germ theory of disease*. Comparatively unknown till within a few years, on account of their very minute size, these microörganisms attracted attention and experimentation chiefly when the improvement of the microscope allowed objects of their size to come within the limits of its powers of observation. At first simply recognized as existing, their persistence and universality demanded question as to what they are, their origin and object.

The history of these microörganisms is related to that of spontaneous generation, to that of the fermentations, to the pathogeny and therapeutics of a great number of virulent and contagious affections; and in a more general manner to all the unknown, which notwithstanding the efforts of modern science still surrounds the origin of life and its preservation.

The bacteria are the lowest of organisms, belonging to the vegetable kingdom and are thus defined by the botanists, who have most recently occupied themselves with them: "Cells deprived of chlorophyll of globular, oblong or cylindrical form, sometimes sinuous or twisted, reproducing themselves partly by spores and by transverse division, living isolated or in cellular families, and having affinities which approach them to the algæ, and especially to the oscillariæ."

The atmosphere transports myriads of microscopic plants and animals. M. Miquel has pursued interesting studies upon them. M. Pouchet has devised the aëroscope, that bears his name, for collecting dust from the air which contains remnants of articles that we use, existing in the condition of impalpable dust, also pollen of plants, particles of mineral matter, and the spores of cryptogams, the moulds and algæ. Some micrographers have suggested that germs may be transported by the vapor of water; but Miquel's experiments show that the evaporation of water from the ground never carries any schizomycetes with it. On the other hand, dry dust, especially from hospitals, etc., is charged with microörganisms. The greatest labors, however, have been employed concerning a different class of organisms than the algæ and moulds. The plants comprising this group, under the common designation of *bacteria*, in consequence of their extreme minuteness and refractive power, are invisible in the preparations of the aëroscopes, and are recognized only by the higher powers of the microscope.

The first observer who recognized the microorganisms was Leeuwenhœck, as early as 1675. While examining with his magnifying glasses a drop of putrid water, the father of microscopy remarked with profound astonishment that it contained a multitude of little globules which moved with agility. During the following year he observed the presence of bacteria in feces and in tartar from the teeth.

M. Cohn is a naturalist who has occupied himself very much with the bacteria. In 1853 he published his first researches upon this subject and twenty years later there appeared a series of "Memoirs" devoted to these organisms. In the first paper he gives an exposition of his researches upon the organization, development and classification of the bacteria, and upon their action as ferments. His classification is:

1. The sphærobacteria, or globular bacteria.
2. The microbacteria, or rod bacteria.
3. The desmobacteria, or filamentous bacteria.
4. The spirobacteria, or spiral bacteria.

This classification has probably been accepted by more germ theorists of to-day than any other classification.[1]

The smaller spherical bacteria may be confounded with various objects, *e. g.*, molecular granules, fat globules, amorphous precipitates, etc. To distinguish these pseudo-bacteria Nägeli says: "There are but three distinctive signs which enable us to recognize with some certainty that the granules under observation are organisms: spontaneous movement, multiplication, and equality of dimensions, united with regularity of form." To which may be added the action of re-agents.

The atmosphere is laden with these microörganisms. Developing in the organic infusions into which they fall, they soon determine their complete decomposition; for during their growth bacteria live upon the nutritive material, as all other plants do upon their soil. This is putrefaction, and they are always present as the cause. As is well known, bacteria are always present in some form or other in fermenting liquids. Fermentation only occurs after the access of particles from the outer world, and it is asserted by the supporters of the germ theory that these particles are organisms or their spores, and that it is by the growth of these organisms in the fermentiscible material that it undergoes alteration. The essentials for the production of new forms are: a putrescible body, water

[1] The classification proposed by Koch is now quite universally accepted. The term *bacteria* is used in the general sense, including both the *micrococci*—the ball forms—and the *bacilli*—the rod forms. —*Written since reading of the paper.*

and air; while heat, light and electricity favor the process.

As Sir William Roberts says: "Without saprophytes there could be no putrefaction; and without putrefaction the waste materials thrown off by the animal and vegetable kingdoms could not be consumed. Instead of being broken up, as they are now, and restored to the earth and air in a fit state to nourish new generations of plants, they would remain as an intolerable incubus on the organic world. Plants would languish for want of nutriment, and animals would be hampered by their own excreta, and by the dead bodies of their mates and predecessors—in short the circle of life would be wanting an essential link. A large proportion of our food is prepared by the agency of saprophytes. We are indebted to certain bacteria for our butter, cheese, and vinegar. Our daily bread is made with yeast, and to the yeast plant (discovered in 1836 by Cagniard de la Tour, and also independently by Schwann about the same time) we also owe our wine, beer and spirituous liquors. As the generator of alcohol, this tiny cell plays a larger part in the life of civilized man than any other tree or plant."

Unfortunately for us, however, they have a powerful potency for evil also, and it is the noble aim of science to be able, by thorough study of the conditions under which that potency is acquired and exerted, to keep it under efficient control.

Much still remains to be determined with regard to the disease-producing possibilities of the germs that in invisible clouds drift in the atmosphere. The more delicate and exact methods of the most recent observers—Koch, Pasteur, Tyndall, Ehrlich, Ogsten, Sternberg and others—with regard to their nature seem to show that that there are many varieties of them, each of which has its own conditions of growth, requiring or developing best in a particular soil. Different species multiplying in different media and varying in their susceptibility to different temperatures and to different chemical reagents. Apparent identity of form does not necessarily indicate identity of nature. They are not convertible into each other. Each species produces only itself, and is produced by itself alone, and when introduced into a substance that affords a favorable soil for its growth always produces the same results. These results are not produced suddenly, but are of gradual development, progressing with the slow and steady multiplication of the organism. They may be cultivated artificially in either solid or liquid media. The best known and most commonly used solid medium is nutrient gelatine, which unites the advantage of transparency with that of solidity; but it has the disadvantage of melting at a comparatively low temperature. When it is desired to cultivate bacteria at a temperature approaching that of the human body, sterilized blood-serum may be used, or a preparation of agar-agar, a Japanese sea moss. The cut surface of a freshly sterilized boiled potato is also a very satisfactory culture medium under some conditions.

For liquid cultures a tube or bulb hermetically sealed, containing a sterilized infusion of hay or meat, is used, which will remain clear indefinitely. When, however, the germs are introduced in ever so minute quantity, they begin to develop, after a varying interval of one to twenty days, and then they rapidly increase. The liquid infusion, previously clear and pellucid, becomes more or less cloudy or turbid. When in this condition, we may be sure of the presence of rapidly increasing microörganisms in great numbers, as the microscope will invariably reveal.

It has been a widely disputed question as to whether bacteria ever occur in the animal in a perfectly healthy state; the affirmative view having been taken by Billroth and some others; but it is denied by Koch, by Pasteur and by Ehrlich, who state that they have never detected bacteria in the healthy animal. The failure of putrefactive bacteria, according to experiments, would go to show inability to struggle against the normal cells indigenous to the soil upon which they were planted. Some bacteria showed power of existence only in tissue in which vitality had entirely ceased, while others seemed to possess the power of existence in the presence of the animal cells when the latter suffered from impairment of nutrition, and the tide of life was turning against them. Abnormal composition of the blood seemed to favor the development of some bacteria, after they had found their way into the tissues.

The theory of a causal relation between bacteria and diseased processes has recently received a wide acceptation. In some diseases this relation is established, while in others it is presumed on the ground that bacteria are found in the blood and diseased products. As additional evidence in favor of special bacteria for different diseases, the fact is advanced that bacteria found in different diseases have been discovered to have different morphological and chemical properties; to which may be added of still greater value, the different appearances presented by the colonies growing upon solid culture media.

Admitting this causal relation of bacteria to disease, it must be demonstrated by successive cultures of the bacteria found to exist in the diseased person, and by the induction of the same disease in man or healthy animals by inoculation, with a reproduction of bacteria. The first discovery of the association of a germ with disease was by Pollender, in 1849, who found certain rodlets in the blood of animals suffering with splenic fever, also variously known as anthrax, charbon, miltzbrand, malignant pustule, and wool-sorter's disease. The specific character of

the parasite was afterwards pointed out by Davaine (1863), and subsequently carefully investigated and confirmed by Pasteur and Koch. The bacillus can be isolated and developed in proper cultivating media, and, when inoculated into some animals will produce splenic fever.

Again, in 1873, Obermeyer, of Berlin, discovered a bacterium in the blood of patients suffering from relapsing fever, which has been named *Spirillum Obermeyeri*. It is found only during the febrile paroxysm, disappearing during the interval. So far, attempts at cultivation have proved unsuccessful.

In March, 1882, Koch, of Berlin, announced the discovery of the *bacillus tuberculosis*, which he asserted to be the exciting cause of tuberculosis. His results have been confirmed by many observers, and the bacilli have been found in the tubercles and sputa of persons suffering from phthisis. As you all know, they reproduce themselves when cultivated under proper conditions, and cause tuberculosis when inoculated into animals.

The discovery of the parasitic origin of glanders followed closely upon that of the bacillus of tuberculosis. This was also made in Koch's laboratory by Prof. Schultz and Dr. Loeffler; and the results were verified by pure cultures and inoculations.

Birch-Hirschfeld has confirmed the discovery of the presence of a microörganism of syphilis, already announced by Aufrecht, which consists of oval-shaped micrococci in chains.

In gonorrhœa a micrococcus was discovered by Neisser, isolated, cultivated, and, it is reported, successfully inoculated.

Bacteria have also been found in malaria and in whooping-cough. A micrococcus has also been found associated with croupous pneumonia, by Friedlander. This may occur singly, but is generally found as a diplococcus.

Von Recklinghausen first described the bacteria of typhoid fever; and Klebs, in 1881, described a large bacillus, which he calls *B. Typhosus*, in which spores are formed in the centre, and often at the end. This is carried by the blood and lymphatics, and is found in all the organs. It is more generally believed, however, that the *causa morbi* is a peculiar short bacillus discovered by Eberth. This is rounded at both ends, and has spores. It is found in the ulcers, mesenteric glands and spleen; and has been cultivated by Gaffky. The inoculation of animals has not been successful; but it must be remembered that they do not have the disease spontaneously.

The *Micrococcus Vaccinæ* is very small, only half the thousandth of a millimetre in diameter, and is found isolated or in pairs, and when cultivated forms chaplets. Cohn regards *M. Vaccinæ* and *M. Variolæ* as different races of the same species, but Magnin thinks them identical. In vaccinia they are found in the lymph of the vesicle, and in its borders in the rete malpighi, and were subsequently traced into the subjacent cutis, especially in the lymphatic spaces. The multiplication and extension coincides with the development of the pustule. In variola, Chauveau (1868) first proved a particular nondiffusible active principle; and Cohn (1872) first proved that the lymph contains numerous micrococci. I have myself cultivated the *M. Vaccinæ* into the third generation in liquid media, the first inoculation being made directly from the lymph of the vesicles on a calf at Dr. Martin's stables in Roxbury; but limited experiments failed to produce characteristic vesicles on babies vaccinated from these cultures.

The comma bacillus of cholera (Koch, 1883) has of late attracted much attention. They are found chiefly in the excreta of cholera patients, are slightly curved like a comma or half of the letter U, and occur single or in pairs like the letter S; when their growth is retarded they form a spiral chain of several members. They are easily cultivated on nutrient gelatine, forming a growth easily distinguished from others, even from those which are morphologically similar, viz, the so-called cholera nostras, comma bacillus of Finkler and Prior, the mouth comma of Miller and the cheese comma of Deneke. After much experimentation Koch has succeeded in inoculating animals. The bacilli require an alkaline medium for their growth; so he injects, with a catheter carbonate of soda into the stomach of guinea pigs, to neutralize the acid of the gastric juice. Then he injects a considerable quantity of a solution containing the comma baccilli. Even this is not sufficient; for they pass through the intestines so quickly that they do not proliferate, and therefore he injects into the peritoneal cavity tincture of opium sufficient to paralyze the intestines and stupify the animal for some time. About half of the animals so treated die in from twelve to twenty-four hours, and a nearly pure culture of comma bacilli is found in the intestines.

In scarlet fever Coze and Feltz have found micrococci in the blood, and inoculation of rabbits sometimes produced death; but it is not certain that it was due to scarlatina. Polae Pineas found very minute micrococci on the scales of desquamating epithelium; and in the throat discharge.

In acute infectious osteomyelitis a peculiar micrococcus is found, which is easily cultivated, and, when rabbits are inoculated, and their bones broken, abscesses form containing micrococci.

In measles, Coze and Feltz found bacteria in the blood which were minute and mobile. The rabbits were not killed. Braidwood and Vacher caused children with measles to breath through glass tubes coated with glycerine, and found sparkling bodies, something like those in vac-

cinia, but larger. These were most abundant during the second and third days. They also found them in the lungs and livers of two children who had died of the disease.

The individuals of the streptococci of erysipelas are smaller than the micrococci of vaccinia. Lukoinsky found them in zooglea masses in the lymphatics, on the border of the erysipelatous zone. Fehleisen also found and cultivated them. He inoculated the ears of nine rabbits, and produced the characteristic rash in from thirty-six to forty-eight hours; the animals did not die. He also produced typical erysipelas, in from fifteen to sixty hours, in men who were inoculated to produce beneficial results in tumors. I have also cultivated them in liquid media.

Septicæmia and pyæmia have been carefully investigated by Koch; and these diseases have been found due to bacteria, which he has cultivated and inoculated.

In diphtheria, micrococci are found in the membrane and in the surrounding lymphatics, blood, kidneys and muscles. They are about the size of *M. Vaccinia*, slightly oval, single or in pairs, and in colonies. Eberth showed the particulate character by filtration. Klebs claims to have produced diphtheria from inoculation of pure cultures, and to have found micrococci in the tissues and blood. Nasiloff inoculated the cornea with enormous multiplication of microörganisms in the lymphatics of the palate, bones and cartilages, and says that they are the primary step.

With the diphtheria micrococcus I have had a personal experience. Some membrane was secured from the throat of a child during the operation of tracheotomy to relieve stenosis caused by diphtheria, and with it one of my hermetically sealed culture bulbs (made after Sternberg) filled with a sterilized nutrient fluid, was inoculated. On the fourth day the liquid, previously clear, became turbid, and, on examination with the microscope at about 1000 diameters, it was found swarming with micrococci in active motion about the size of the micrococcus of pus. In form they were slightly elongated, and although found singly, were generally in groups of three or four to eight or twelve. A second bulb was inoculated with a fraction of a drop from the first; it became turbid on the third day, and was found to contain a microörganism identical with the former. In this way about fifty bulbs were used, and the cultivation was carried through ten generations, each bulb becoming turbid on the third day, and the micrococci breeding true.

With the contents of one of the bulbs containing the sixth cultivated generation of the micrococci, six guinea pigs were inoculated in the cornea of the eye. One of them died about thirty hours later, with symptoms of blood poisoning; but the rest survived. The eyes became very sore, the lids being much swollen and œdematous, and a membrane developed over the cornea. There was profuse discharge, which contained abundant micrococci. Three pigs were killed on the third day, and the eyes dissected for examination. The others were allowed to get well, but the eyes were completely destroyed. In the aqueous humor, and in the corner of the eyes examined, were found minute, highly refractive particles of uniform size, presumably micrococci. On the third day after killing the guinea pigs, I myself had a sore throat, and in twelve hours a large diphtheritic membrane had developed on the left tonsil, accompanied with high fever and constitutional symptoms. The disease ran a typical course, and convalescence was slow. Here, then, we have the chain of events complete. A fatal case of diphtheria, from which the germs were cultivated in pure cultures through ten generations, and the inoculation of the animals from which the experimenter himself contracted the disease with development of membrane containing micrococci, which reproduced themselves in cultures.

The question as to the origin of life has been much disputed, and the exponents of spontaneous generation and of the germ theory still continue the contest.

Extremists in the doctrine of evolution cannot sustain the hypothesis that the whole system of animal life is but a growth of one or more original species, changing into or evolving others through methods of development. The long ages of the past show the universality of the law of life, that like produces like.

Neither the agnostic nor the materialist can account for the origin of matter, much less can they account for the origin of mind. Naturalists tell us that while the animal and vegetable kingdoms are reducible to primoidal cells; that while there is a time when the embryos of species cannot be distinguished from each other by any essential features, yet the variety of structural forms, and the diversity of physiological functions which cells develop, are always according to the special type and construction of their parent cells; evidencing a unity of plan in their construction and development.

1. The germ theory asserts that no life has been evolved (except in the remotest periods of the earth's history) other than from a living parent or a living germ.

2. The spontaneous generation theory asserts that now, as of old, life does also spring *de novo* from molecular rearrangements of the atoms of dead organic matter.

No authority, except that of experimental work, can weigh a feather in the balance; no *a priori* reasoning can give the victory to either creed. The one condition is, to take dead matter, isolate it from all contact with life, place it

under favorable conditions for development, and watch the result.

The first views founded on experiment and observation, apart from mere philosophical speculation, are those of Needham and Buffon, published in 1748. Needham's theory was that vitality is produced by a force setting particles in motion, which he calls *force vègètatrice*. Needham was opposed by Spallanzani, in 1777, who repeated his experiments by methods so precise as to overthrow the convictions based on Needham's labors. Schultz made an important advance by boiling his infusions and using pure air, and was followed by Schwann, Schroeder and Von Dusch. In 1859, Pouchet, one of the most ardent supporters of spontaneous generation, published his work. He does not look on these organisms as originating from dead matter, though he believes that it is the contact of different bodies which gives rise to the development of protoörganisms. Yet their origin is not due to affinity alone; vital force must also come into play, which owes its power to certain unknown concomitant circumstances. The essentials for the production of the new forms are, a putressible body, water, and air, while heat, light, and electricity favor the process. His experiments were performed very loosely, and are subject to many errors.

Appearing shortly after Pouchet's work and leading to diametrically opposite conclusions, were the researches of M. Pasteur, who begins by attempting to demonstrate the existence of spores in the atmosphere. The greatest blow was given to the views of the heterogenists when Pasteur demonstrated that albuminoid materials are not necessary for the development of bacteria and fungi, but that they can be replaced by crystalline salts, such as phosphates and the salts of ammonia.

The experiments of Prof. Jeffreys Wyman have been largely quoted by the supporters of heterogenesis as proving their view, though Wyman himself expressed no such opinion, having approached the subject with a perfectly unbiased mind. To Prof. Wyman is ascribed great credit by Cheyne, whose results agree with his own.

Dr. Bastian (1872) gives up the theory that organic molecules are derived from previously living molecules and attempts to demonstrate that vital force and living matter may arise *de novo* under the action of the ordinary physical forces—heat, light, and electricity. This change of front on the part of the heterogenists is clearly brought about by the overwhelming evidence produced against Pouchet's views, and more especially by Pasteur's success in cultivating organisms from dust in fluids containing no organic matter.

The limitation of cases of spontaneous generation which has been gradually taking place is very instructive. Beginning with the higher animals it became more limited, frogs, flies, etc., being by degrees excluded, till now it is only in the case of the lowest forms of life that the doctrine is asserted, and even then only in certain cases.

Not long since the people of Boston were invited to listen to a series of lectures which continues the discussion of the much-disputed question of the origin of life. The lecturer, although announcing himself as a decided opponent of the germ theory, could not agree with the spontaneo-generationists, and offered views somewhat peculiar to himself. His objective point was the so-called "*ambient organic matter*," of which he could give no definition, but in a long series of illustrations of what he meant, he showed it to be synonomous with the *bioplasm* of Dr. Lionel Beale. The term bioplasm, as Dr. Beale says, involves no theory as regards the nature or origin of the matter. It simply distinguishes it as *living*, *e. g.*, a living white blood corpuscle is a mass of bioplasm, or it might have been termed a *bioplast;* a very minute living particle is a bioplast, and we may speak of living matter as bioplasmic substance. It is bioplasm, or ambient organic matter, according to the new view, that is at the bottom of all the functions of life, it having, to a certain extent, a low degree of inherent vitality; and the results of the various experiments that have been performed are due to the ambient organic matter, which has never yet been separated, it was urged, from the germs.

It was argued that the germ theorists can prove nothing till they can isolate an organism on a needle-point and use it for innoculation, after thoroughly washing and drying. Floating dust of the air, he added, is not germs, but ambient organic matter. He also expressed a desire to introduce some ambient organic living matter into the infusions and see what it would do.

Hearing it so strongly urged that we have been mistaken concerning the action and importance of the minute organisms which have made up what they lack in size by the interest they have awakened during the last quarter of a century, it occurred to me that such a theory would be of more value if accompanied by facts based upon actual experiments, but no such experiments were offered to prove the theory, which was allowed to stand by itself. In these days a theory is accepted for what it is worth, and when it relates to science it must be supported by facts. Not considering this theory capable of self-support, and not content to leave the subject in this way, I have still further investigated it.

I am reminded of Prof. Tyndall's experiments with hermetically sealed tubes. One hundred and thirty tubes were used, and to multiply the chances of spontaneous generation they were filled with infusions of the most diverse materials (in all numbering twenty-four). Each tube con-

tained an ounce of liquid and was boiled for three minutes in an oil-bath, and sealed by a spirit lamp during ebullition. Two months later this group of flasks was submitted to the inspection of the Royal Society and not one of them was found to contain life. That the infusions were not degraded by boiling was proved by similar exposed tubes which "resolved themselves with the usual speed into bacterial swarms." Special care had been taken that the temperature to which the flasks were exposed should include those previously alleged to be efficient. The conditions laid down by the heterogenist were accurately copied, but there was no corroboration of his results.

Again, sixty flasks were thus prepared containing strong infusions of beef, mutton, turnip, and cucumbers, carefully packed in sawdust and carried to the Alps, 7000 feet above sea level. Fifty arrived safely, of which twenty-three were opened on a hay-loft, and the other twenty-seven, 200 feet higher, on a ledge overlooking the Aletsch glacier. The fifty flasks, with necks open, were then placed over the kitchen stove at a temperature of 50° to 90° F. In three days twenty-one of the twenty-three opened in the hay-loft were invaded with organisms; but after three weeks' exposure not one of the twenty-seven opened in the free air had become contaminated. No germ from the kitchen air had ascended the narrow necks, the flasks being shaped so as to avoid this contingency.

Sir Joseph Lister's experiments with milk prove a great deal against the view of spontaneous generation. In his attempts to obtain pure unboiled milk, he found that in none of his flasks did he obtain lactic fermentation, but that in all but two (out of some fifty or sixty flasks), organisms of some form or other occurred, these organisms being in many flasks of totally distinct kinds. The fact that no organisms appeared in two flasks, and the great variety developed, prove that they could not have been developed *de novo*; for all being made under the same conditions any change occurring in one due to something inherent in the milk, or due to some physical force acting on it, would have occurred equally in all.

We have then a great number of experiments made by distinguished observers, of which I have quoted only a few, which show that life does not commence in substances unless something living exists in or has access to them. No one will deny the existence of the bioplasmic or ambient organic matter, but I must believe that it plays a far different rôle than was ascribed to it by the lecturer, and I also believe that the *germs* exist and play their part.

If we examine fresh blood serum, the aqueous humor of the eye, white of egg, or milk, we will find, with high powers of the microscope (1000 x), in greater or less quantity masses of varying size and shape, made up of minute, shining, highly-refractive particles, with or without Brownian motion, which have a low degree of inherent vitality, and which are bioplasmic or ambient organic matter. No one with any experience is likely to mistake these for the minute, highly-refractive bodies of uniform size, single or in groups, which we recognize as micrococci or bacteria.

These substances, then, containing the ambient organic matter in sufficient quantity, and being free from germs, were selected for testing in the experiments which I made to see if the extraordinary statements of the lecturer had a basis of fact.

Fresh blood was caught in flasks at the abattoir, as it flowed from the necks of the animals, and was sealed up until the clot had separated. Bulbs (see tables) similar to those mentioned above, sterilized by heat, were then filled with the serum, and to the culture bulbs containing sterilized nutrient fluid, serum was added in varying quantity, and the bulbs were hermetically sealed. Milk was carefully drawn from the cow into a flask sterilized by heat, from which culture bulbs were inoculated. Bulbs were filled and culture bulbs inoculated from the white of an egg still warm from the nest, and also the aqueous humor of the eyes of freshly-killed sheep. The substances introduced into the bulbs were never boiled, because it was argued that the boiling of the infusions is unfair, by rendering them sterilized, barren, and almost inorganic.

These bulbs were kept at a temperature of about 70° F., and examined with the microscope after varying intervals. Of the forty-five bulbs (see tables), forty-four remained perfectly clear and pellucid, and the microscope revealed the same bioplasmic masses as the fresh materials. In only one were there any signs of life, and this a bulb that had been inoculated with serum, was found to be undergoing fermentation, and was swarming with the germs of putrefaction, bacteria termo, proving it to have been accidentally contaminated.

In the control experiments these materials, *exposed to the air*, under the same conditions, give a far different history, as they rapidly underwent fermentation, and then contained, in addition to the same bioplasmic masses, the germs of putrefaction. Such, then, is the effect of bioplasmic or ambient organic matter, *plus* the germs, at a temperature of 70° F. Alone, however, although upon the germinal qualities of it so much has been suggested, not only does it fail to generate life, but it has no power of reproduction, and is at best an organic nutrient material, serving the highest purpose for bioplasmic use, but having in itself absolutely no independent power of growth.

DR. NELSON'S EXPERIMENTS WITH CULTURE BULBS AND BIOPLASMIC MATTER.

No.	Substance Tested.	Day Exam.	Conditi'n of Fluid.	Scum.	Sediment	Microscopic Appearances.
1	Serum from sheep's blood	6	Clear.	None	None	Same bioplasmic masses as fresh serum.
2	" " " "	6	"	"	"	" " " " "
3	" " " "	6	"	"	"	" " " " "
4	" " " "	6	"	"	"	" " " " "
5	" " " "	11	"	"	"	" " " " "
6	" " " "	16	"	"	"	" " " " "
7	Culture bulb inoculated with serum from sheep's blood	6	"	"	"	" " " " "
8	" " " " " " " "	6	"	"	"	" " " " "
9	" " " " " " " "	6	"	"	"	" " " " "
10	" " " " " " " "	6	"	"	"	" " " " "
11	" " " " " " " "	6	Slightly turbid.	"	"	" " " " " and in addition, active bacteria termo very abundant.
12	" " " " " " " "	9	Clear.	"	"	Same bioplasmic masses as fresh serum.
13	" " " " " " " "	9	"	"	"	" " " " "
14	" " " " " " " "	11	"	"	"	" " " " "
15	" " " " " " " "	16	"	"	"	" " " " "
16	" " " " " " " "	17	"	"	"	" " " " "
17	" " " " " " " "	17	"	"	"	" " " " "
18	" " " " " " " "	17	"	"	"	" " " " "
19	" " " " " " " "	17	"	"	"	" " " " "
20	" " " " " " " "	17	"	"	"	" " " " "
21	" " " " " " " "	17	"	"	"	" " " " "
22	" " " " " " " "	17	"	"	"	" " " " "
23	" " " " " " " "	17	"	"	"	" " " " "
24	" " " " " " " "	8	"	"	"	" " " " " (This bulb inoculated from No. 1 at 9th day.)
25	Serum from sheep's blood	9	"	"	"	Same bioplasmic masses as fresh serum.
26	" " ox's blood	6	"	"	"	" " " " "
27	" " " "	6	"	"	"	" " " " "
28	Culture bulb inoculated with serum from ox's blood	6	"	"	"	" " " " "
29	" " " " " " " "	6	"	"	"	" " " " "
30	" " " " " " " "	17	"	"	"	" " " " "
31	" " " " " " " "	17	"	"	"	" " " " "
32	Aqueous humor of eye of sheep	6	"	"	"	" " " " "
33	" " " "	6	"	"	"	" " " " "
34	Culture bulb inoculated with aq. humor of eye of sheep	6	"	"	"	" " " " "
35	" " " " " " " "	6	"	"	"	" " " " "
36	" " " " " " " "	6	"	"	"	" " " " "
37	Culture bulb inoculated with milk	4	"	"	"	" " " " "
38	" " " " " "	4	"	"	"	" " " " "
39	" " " " " "	4	"	"	"	" " " " "
40	" " " " " "	5	"	"	"	" " " " "
41	Albumen—white of egg	5	"	"	"	" " " " "
42	" " " "	5	"	"	"	" " " " "
43	Culture bulb inoculated with albumen, white of egg	5	"	"	"	" " " " "
44	" " " " " " " "	5	"	"	"	" " " " "
45	" " " " " " " "	5	"	"	"	" " " " "

RÉSUMÉ OF DR. NELSON'S EXPERIMENTS WITH CULTURE BULBS AND BIOPLASMIC MATTER.

Substance Tested.	Day Exam.	No. of Exp'ts.	Total No.	Microscopic Appearances.
Bulbs filled with serum from sheep's blood	6	4		Same bioplasmic masses as fresh serum.
	9	1		" " " "
	11	1		" " " "
	16	1	7	" " " "
Culture bulbs inoculated with serum from sheep's blood	6	5		Same bioplasmic masses as fresh serum, and one in addition active bacteria termo very abundant.
	9	2		Same bioplasmic matter as fresh serum.
	11	1		" " " "
	16	1		" " " "
	17	8		" " " "
	8	1	18	" " " "
Bulbs filled with serum from ox's blood	6	2	2	Same bioplasmic masses as fresh serum.
Culture bulbs inoculated with serum from ox's blood	6	2		Same bioplasmic masses as fresh serum.
	17	2	4	" " " "
Bulbs filled with aqueous humor from eye of sheep	6	2	2	Same bioplasmis masses as fresh serum.
Culture bulbs inoculated with aqueous humor	6	3	3	Same bioplasmis masses as fresh serum.
Culture bulbs inoculated with milk	4	3		Same bioplasmic masses as fresh serum.
	5	1	4	" " " "
Bulbs filled with albumen, white of egg	5	2	2	Same bioplasmic masses as fresh serum.
Culture bulbs inoculated with albumen	5	3	3	Same bioplasmic masses as fresh serum.
			45	

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MEDICAL PROGRESS.

ON THE IDENTITY OF ERYSIPELAS AND ACUTE LYMPHANGITIS. — VERNEUIL and CLADO, after many microscopical experiments, say on this subject: Erysipelas and acute lymphangitis are two affections, closely related to each other, which are best and most frequently observed on the surface of the body, the nature and relations of which have often been discussed without all perfectly agreeing on these points. Some consider them one and the same disease, or at the most two forms of the same disease; others separate them entirely, although admitting that they may exist at the same time and become one.

Those taking the former view (among whom are Verneuil and Clado) advance the following arguments:

1. They have the same anatomical seat in common; lymphangitis occupies the trunk, and erysipelas the branches of the lymphatic system; both invade the ganglions.

2. The similarity in the pathological process; the two affections present, wherever they are visible, the principal symptoms of a true inflammation.

3. The same starting-point in an interruption of the continuity of the skin surface.

3. The same symptoms; chills, vomiting, rapid rise of temperature, etc., with the same general symptoms of a sudden intoxication.

5. The inability, in a great many cases, of the physician to say whether he has to do with lymphangitis or with erysipelas, or with a combination of both, as the disease begins sometimes in one form, sometimes in the other.

To these numerous and powerful arguments Messrs. Verneuil and Clado add another which, based upon microscopical observation, is absolutely decisive: the discovery in lymphangitis of the erysipelas microbe. This discovery, in the cases which the authors observed, combined with the results of the pure cultures and inoculations made by them, led them to the following conclusions:

1. Erysipelas and lymphangitis are simply different forms of the same contagious, infectious, parasitic disease.

2. Their agent is a special microbe which may be easily recognized, isolated, cultivated and inoculated upon animals.

3. This microbe, which had been discovered and described in erysipelas only, is also found in acute lymphangitis with all its proper qualities and characteristics.

4. It establishes, therefore, the absolute identity of two affections which, by numerous authors, have been considered so far as different diseases. —*La Semaine Médicale*, 1889, No. 16.

PAGET'S DISEASE OF THE NIPPLE.—DR. J. DARIER declares that follicular psorospermosis is not the only affection of the skin caused by parasites of the class sporozoæ. Another, which differs from the first named and is caused by another kind of psorospermæ, is Paget's disease of the nipple. In 1874 Paget called attention to a chronic affection, apparently eczematous, of the skin of the mamma and aureola, which is almost always followed by cancer of the breast: The numerous authors who have since published such cases, enumerate as characteristics of the eruption which distinguish it from common eczema: its limitation by a well defined line, the parched induration of the skin, the absolute incurability, and finally and especially the complication, after a shorter or longer period, by a cancer. Histological examinations by Bultlin, Fhin, Duhring and others did not explain the nature of the affection, which some have since regarded as an eczema which extended to the milk channels, and others as an unknown disease *sui generis*. Darier thinks that the following facts will render it possible to understand the peculiarities as yet unexplained of this type of disease.

If some of the scales are taken from the diseased surface and dissolved in water or in a solution of iodide, whether directly or after maceration in diluted ammonia or bichromate of ammonia, small round bodies, surrounded by a refracting

membrane with double contour, are at once discovered among the epithelium cells and often in their interior. These bodies have a diameter which is larger than that of the cells or equally large; their membranes contain a mass of protoplasm or of more or less numerous corpuscles. These bodies are always found in sections or fragments of the excised skin, in all the layers of the epidermis, and especially in the glandular prolongations of the epidermis. The character of these bodies admits the conclusion that we have to do with psorospermæ or coccidix. They are present in all stages of evolution; a mass of protoplasm, at first naked, subsequently surrounded by a membrane, divides itself later on into numerous granules enclosed in a cyst.

The epithelioma of the mamma contains similar parasites, and also a large number of elements which cannot with certainty be distinguished from epithelial cells, but which are often enclosed in other cells. Bultlin, who saw this in 1876, thought it an instance of endogenesis. The parasites are probably more numerous than they appear to be. That they play a part in the formation of the tumor seems probable, since there is in each lobe a certain number of coccidix in their characteristic form.

It is a well-known fact that the presence of these organisms in the tissue of the epithelium produces a budding and extension of it; it is known from the psorospermosis of the gall ducts of the rabbit, and Darier demonstrated it in the follicular psorospermosis in man. Mr. Albarran quite recently exhibited epithelioma containing coccidix, and further demonstrations of this kind will soon be quite numerous. It is, therefore, logical to suppose that the parasites which produce the epidermic lesion in Paget's disease of the nipples, cause also the epithelial growth of the milk channels which constitutes the epithelioma.

The above facts appear important from different standpoints. Paget's disease of the nipple is a parasitical affection, a psorospermosis; its diagnosis becomes easy by microscopical examination of scales such as Darier made in four cases. Then also, this disease furnishes a first indication of the nature and the pathogeny of certain epitheliomas. —*La Semaine Médicale*, 1889, No. 16.

DURATION OF VITALITY OF TYPHUS AND CHOLERA BACILLI IN THE FÆCES.—PROFESSOR DR. J. UFFELMANN, of Rostock, on the basis of experiments tending to solve this question, which largely agree with those made by Kitasato, has come to the following conclusions:

In human fæces, that is in human fæces and urine, the cholera bacillus retains it vitality for four days at the utmost, if these fæces are kept, as usual, in privies or in large kegs or tubs. As a rule it dies much sooner, generally with the second or third day, often even on the first day. It seems to retain its vitality longer in a mixture kept at a temperature of more than 16° than in fæces kept at a lower temperature than 9°. It can also be found for a longer time in those fæces to which it was added in large numbers, than in those which contained but few. Whether the addition of urine hastens the end of the bacillus the author is not able to say. But the fact is of importance that it retains its vitality for at least twenty-four hours.

As regards the typhus bacillus, it was found to possess great power of resistance. Under certain conditions it retains its vitality for four months; it may even be assumed that it may last much longer, even since it existed in certain samples in large numbers at the expiration of that period. But its vitality in the fæces is not always the same; different temperature seemed to have a decided effect, experiments showing that in fæces kept at a temperature of 17°, or more, the bacilli increased in number, whereas with a temperature of less than 10° an increase is not to be thought of.—*Centralblat für Bakteriologie und Parasitenkunde*, 1889, No. 16.

MENTHOL IN ASTHMA.—DR. TH. JORES, of Kastellaun, had been treating since October, 1888, a lady 50 years old who had had, in the summer of 1888, several large polypous growths removed from her nose by a specialist. When Jores took charge of the patient her principal trouble consisted in periodically (every two or three days) occurring congestions to the head, combined with difficulty in breathing. Hand- and foot-baths, purging, applications of several leeches to both sides of the proc. mastoid. gave no relief.

Gradually the congestion subsided, whilst the difficulty in breathing increased. Against these attacks, which were purely asthmatic, Jores used in the course of treatment a long series of drugs, all of which, however, were effective for a few days only. A communication in the *Allgemeinen Medicinischen Central-Zeitung* which he saw in December, regarding the favorable effect of menthol in lung disease (which effect was said to be especially on the secretion of mucus), induced him to use menthol. Whilst before the use of the drug (a 20 per cent. solution of menthol in ol. oliv.) auscultation of the lungs showed everywhere crackling and rattling noises, the trouble completely disappeared as by magic after a few inhalations; auscultation showed perfectly normal breathing, heart-beat unchanged, pulse full and strong. Patient, on being asked, simply remarked that her head felt sometimes benumbed, "as though she had inhaled chloroform without taking enough of it." Since its first application (January 2, 1889), the drug has proven effective in every attack, always with prompt success.—*Therapeutische Monatshefte*, 1889, No. 4.

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SATURDAY, MAY 25, 1889.

A BRIEF REVIEW.

The records of the Association for forty years are nearly written. At Newport, on the 25th of June next, its Fortieth Annual Meeting will be convened. A few words with reference to its history and purposes will be of interest to those who, during later years, have become members of the Association.

In 1845 the New York State Medical Society, by resolution, "recommended a *National Convention of Delegates*, from medical societies and colleges in the whole *Union*, to convene in the City of New York, on the first Tuesday in May, 1846," and in the preamble set forth the objects of the meeting. In answer to that recommendation a National Convention of Delegates from medical societies and colleges assembled in the City of New York, May 5, 1846, and Dr. Jonathan Knight, of New Haven, Conn., was made chairman. Sixteen of the United States were ably represented in this Convention. A series of important resolutions was introduced, and after full consideration it was determined to refer them to special committees, who should report upon them at a second Convention to be held at Philadelphia during the following year.

On May 5, 1847, this second Convention assembled in Philadelphia, and Dr. Knight, of Connecticut, was continued chairman. The Convention was largely attended by delegates from nearly every State and Territory, and continued in session for three days. The various committees presented a series of able reports upon the resolutions which had been referred to them severally at the previous meetings. These reports were fully discussed and, with such modifications as were deemed judicious, were adopted.

At the evening session of the third day of the Convention, May 7, 1847, it was unanimously "*Resolved*, That this Convention do now resolve itself into THE AMERICAN MEDICAL ASSOCIATION, and that the officers of the Convention continue to act as officers of the Association, until others are appointed."

A committee representing twenty-one States and the District of Columbia was appointed to nominate permanent officers for the Association. Nathaniel Chapman, of Philadelphia, was the first President elected. All the various officers were appointed, the committees were named, the business of the Association completed, and the Association adjourned to hold its first annual meeting in Baltimore in May, 1848.

The subsequent places of meeting and the Presidents in order have been as follows:

1848. Baltimore, A. H. Stevens, New York.
1849. Boston, J. C. Warren, Massachusetts.
1850. Cincinnati, R. D. Mussey, Ohio.
1851. Charleston, James Moultrie, South Carolina.
1852. Richmond, B. R. Wellford, Virginia.
1853. New York, J. Knight, Connecticut.
1854. St. Louis, C. A. Pope, Missouri.
1855. Philadelphia, Geo. B. Wood, Pennsylvania.
1856. Detroit, Zina Pitcher, Michigan.
1857. Nashville, Paul F. Eve, Tennessee.
1858. Washington, H. Lindsley, District of Columbia.
1859. Louisville, Henry Miller, Kentucky.
1860. New Haven, Eli Ives, Connecticut.
1861. No meeting.
1862. No meeting.
1863. Chicago, Alden March, New York.
1864. New York, N. S. Davis, Illinois.
1865. Boston, Constitution amended. Same officers continued.
1866. Baltimore, D. H. Storer, Massachusetts.
1867. Cincinnati, H. F. Askew, Delaware.
1868. Washington, S. D. Gross, Pennsylvania.
1869. New Orleans, W. O. Baldwin, Alabama.
1870. Washington, Geo. Mendenhall, Ohio.
1871. San Francisco, Alfred Stillé, Pennsylvania.
1872. Philadelphia, D. W. Yandell, Kentucky.
1873. St. Louis, T. M. Logan, California.
1874. Detroit, J. M. Toner, District of Columbia.
1875. Louisville, W. K. Bowling, Tennessee.
1876. Philadelphia, J. Marion Sims, New York.
1877. Chicago, H. I. Bowditch, Massachusetts.
1878. Buffalo, T. G. Richardson, Louisiana.
1879. Atlanta, Theophilus Parvin, Indiana.
1880. New York, Lewis A. Sayre, New York.
1881. Richmond, J. T. Hodgen, Missouri.

1882. St. Paul, J. J. Woodward, U. S. Army.
1883. Cleveland, Jno. L. Atlee, Pennsylvania.
1884. Washington, Austin Flint, New York.
1885. New Orleans, H. F. Campbell, Georgia.
1886. St. Louis, Wm. Brodie, Michigan.
1887. Chicago, E. H. Gregory, Missouri.
1888. Cincinnati, A. Y. P. Garnett, Dist. of Columbia.
1889. Newport, W. W. Dawson, Ohio.

These annual meetings have been largely attended by prominent medical men representing every section of the United States. The division of the members into Sections for the purpose of special work was early found to be a necessity. The mornings are given to matters requiring consideration in general session; the afternoons to Section work. Thus ample provision is made for the presentation of papers, and for discussion in each of the special departments. The interests of the profession at large, as well as of writers themselves, cannot be better served than by giving to these several Sections the cordial support and the best service that the profession can command. Every provision for the presentation of papers in the different departments of medicine and surgery, and for their full discussion, is as ample here as can be made for special sessions elsewhere.

Among the many important and valuable results which the Association has labored to accomplish we may name:

First. By the early adoption of a Code of Ethics which commends itself to the approval of all medical men, it has clearly defined the rules that should govern, not only among members of the profession, one with another, but also their relations with the people.

Second. It has fostered fraternal fellowship, and helped to bring into close and friendly relation the medical men of all parts of this broad Union.

Third. It has always been the earnest advocate of a higher standard of medical education and in every way possible has sought to stimulate original investigation.

Fourth. Its influence has always been helpful to our medical colleges—and it has favored the maintenance of medical societies, both State and local, everywhere.

Fifth. For the purpose of assuring the closest possible relations with the masses of the profession—it even commits its own management to their delegates, as they shall come fresh from the local societies to express their will, from year to year, rather than to permanent members, who might in time misrepresent their constituencies.

The Association is in accord with the genius of American institutions. It is National in its representation, and never sectional in interests. It is in no sense exclusive, and yet makes ample provision, for those who by reason of talent and culture, may best serve the profession as instructors and guides. More than at any previous time it commends itself to the cordial support of the profession, and it is to be hoped that it will continue to command the services of the ablest men in the profession for the furtherance of the interests of Medicine in America.

OUR MEDICAL COLLEGES.

In another department of this number of THE JOURNAL is published a tabulated list of the medical colleges in the United States and Canada, and their requirements and courses. This table has been prepared for the purpose of showing, as well as possible in a limited space, the present condition of medical education in English-speaking America. Notwithstanding the fact that four sets of circulars were sent out for information, on March 9, 29, April 15 and 25, some of the colleges failed to return the circulars properly filled out.

On examining the table one can easily see that in the United States especially, there is the greatest diversity in the medical college curricula. The Canadian curricula are, as a rule, uniform. The requirements shown vary from the first to the last column of the table. It is shown that medical education in this country is in a heterogeneous state. We have colleges for the uneducated and for the educated student; colleges for the would-be doctor fresh from the plow-handle; colleges in which the pupil may patch up his educational defects—to the satisfaction of himself and the faculty; and from this class up through a series of gradations to the college that requires the matriculant to have the general education without which no one is ready to study medicine. We have colleges from which a student may be graduated without having seen a patient except over the rail of the amphitheatre; from which the pupil may receive a diploma—a license to practice in many States—without being able to make the simplest urinary analysis, without hav-

ing seen a case of labor, without having received instruction in applying the simplest surgical dressing or bandage, without the ability to recognize normal tissue under the microscope, or by the naked eye, without the ability to make a post-mortem examination. It is gratifying to know, however, that this class includes but a small number of colleges.

The readers of THE JOURNAL are probably familiar with the admirable address of PROFESSOR OSLER before the Medico-Chirurgical Faculty of Maryland on "License to Practice," published in THE JOURNAL of May 11. But as this issue will go to a large number that have not had the opportunity of reading the address, we may be allowed to quote from it. In regard to raising the standard of requirements in the colleges he says:

"Too often college faculties seem stricken with timidity in the presence of suggestions to lengthen the curriculum and to raise the standard. Yet, a superficial study of the history of the movement since 1871 and 1872, when Harvard[1] so nobly took the lead, should be convincing to all that, even from the lowest considerations, the advance should be successful. You have but to look to the condition of the schools which have been in the van, to see that the bread cast upon the waters has already been found. I do not say that these schools are in all instances the most prosperous numerically. Heaven forbid; that is not a standard of merit. But, take the laboratory equipment, the measure in which they fulfil medical requirements, the practical teaching and the development of clinical instruction, and I say without fear of contradiction, that these schools have met with an ample and a just reward. And yet these are the very schools which clamor loudest for further advance, showing how dangerous it is to arouse the slumbering conscience and to abandon the conviction that a two session course is sufficient for the average American student. But in spite of all that has been done, in spite of the agitation which has been so active during the past ten years, the sad truth must be told that a large percentage of doctors are graduated annually after only two sessions of study.

"On paper, the two session schools almost universally demand three years; one of which, it is stated, may be with a physician. Now, it is notorious in these schools that a large majority of the men receive the degree at the end of the second college year, and it is just as notorious that not 5 per cent. of the cases in which a preliminary year of study has been passed with a physician is a *bona fide* period of medical instruction. It practically amounts to this, that a man enters without any fair preliminary test as to elementary education, say on the first of October of the present year, and eighteen months from date, or rather seventeen months, sometime in March, 1891, he will be let loose upon the commonwealth. Eighteen months in which to master one of the highest, as it certainly is one of the most difficult of the professions which man is called upon to practice! That, gentlemen, these are facts, sad facts, each one of you knows. Yet so blind do men seem in this matter, so wedded to this pernicious system, that I have known physicians in large practice, able, cultivated men, contributors to medical literature, standing high in the esteem of their brethren, permit their sons to follow out the curriculum. Picture, if you can, the mental condition of such a graduate; an incoherent jumble of theories, a chaotic assortment of what he would call practical tips. But this question has its tragic side, which completely overshadows everything else. It makes one's blood boil to think that there are sent out year by year scores of men called doctors, who have never attended a case of labor, and who are utterly ignorant of the ordinary everyday diseases which they may be called upon to treat; men who may never have seen the inside of a hospital ward, and who would not know Scarpa's space from the sole of the foot. Yet, gentlemen, this is the disgraceful condition which some school men have the audacity to ask you to perpetuate; to continue to intrust interests so sacred to hands so unworthy. Is it to be wondered, considering this shocking laxity, that there is a widespread distrust in the public of professional education, and that quacks, charlatans and impostors possess the land?

"But the handwriting is on the wall, the interpretation has been read, and the prophecy indeed is in course of fulfillment. It needs not the vision of a son of Beor to advertise that within ten years in scarcely a State of the Union will the degree carry with it the privilege of registration; and with this removal of the kingdom from the schools will dawn a new era for the profession in this country. This will happen when unrestricted competition between the colleges, and the total absence of professional and State restraint are things of the past."

In regard to the regulation of medical study and practice, Professor Osler mentions three courses that are open: 1. A continuance in the plan at present, widely prevailing, which makes the college the judge of the fitness of the candidate; and State supervision is only so far exercised that the diplomas are *vised* and registered, if from legally incorporated schools. 2. The appointment by the State, or by parties so deputed, of a Board of Examiners which shall, irrespective of diplomas, examine all candidates for the license. 3. The organization of the entire profession in each State into an electorate which shall send representatives to a central parliament, having full control of all questions relating to medical education, examination and registration. The second and third plans are undoubtedly the best of the three.

"Under the second plan the entire question of registration is placed in the hands of examiners, appointed by the Governor or by the State societies. Such a board to be effective must constitute the only portal to practice. The practical working, as shown in North Carolina, Virginia and Minnesota, presents no difficulty, and it constitutes and effective barrier against the inroads of poorly qualified graduates. Within a few years this measure will be widely adopted. It has certain advantages in a simple mechanism, and in clearly-defined duties. But the powers are to limited, and there is no control of education, preliminary and special, such as comes strictly within the power of the profession in each State."

In regard to the third plan, Dr. Osler says:

"Theoretically, there can be no question (particularly in democratic communities) that a State Board should be elective, not appointed by the Governor or the societies. An elective board is in reality a medical parliament, which should take cognizance of all matters relating to

[1] If Harvard took the lead it was only after the full three years' graded course had been in operation several years in the Chicago Medical College.

medical education, and, perhaps, though of this I am not so sure, of questions of public health within the State. The assembly districts or other territorial divisions which might be made, would send one, or perhaps two representatives to the board (depending upon the professional population in each district). The electors would be constituted by all practitioners, irrespective of schools, which had registered at a certain date. A man who had practiced, even without a diploma, for a certain time would, under these circumstances, have to be recognized and permitted to register. The Governor of the State would issue the first warrant for the election, which would subsequently be the prerogative of the executive of the board. It might be necessary, at first, to have, from each district, members returned from at least three of the divisions which at present constitute practitioners. The representation should be *per capita*, the number of constituents in each electorate to be previously arranged. The term of the board should be, at least, four or five years, and members should be eligible for reëlection. Conducted by ballot there should not be the slightest difficulty in carrying out such an election. There would be, of course, active canvassing, and, perhaps, many nominated from one district. Though there would be opportunities for political trickery and gerrymandering, I think, on the whole, it would be found that an election could be conducted with tolerable purity. The universities and schools would have full representation on the board. To such an organization, I believe, might be intrusted the control of all matters relating to medical education in the State. It would correspond to the law societies, and to the synods and conferences of the various religious denominations. The powers of such a board would be accurately defined by legislation, and should relate, first, to preliminary education; secondly, to the examination and registration of candidates for the license to practice; and thirdly, the control of all matters relating to discipline with the profession. The necessary expense would be met—first, by the fees paid by the candidates for examination; secondly, by a small annual tax levied upon all registered practitioners. Such a body could look forward hopefully to a permanent establishment in each State, with buildings suitably equipped for examination, and with every possible provision for conducting, in an orderly and systematic manner, the business of the profession."

We have quoted thus extensively from Dr. Osler's address because his suggestions are of the highest importance, and many will now read them that did not see the number of THE JOURNAL in which they were published.

THE PROGRAMME OF THE ANNUAL MEETING.

In this number of THE JOURNAL a Programme of the Fortieth Annual Meeting of the Association is given, with, in addition, much information about Newport, where the meeting will be held from June 25 to 28. The programme assures a most interesting meeting, of much scientific value. The officers of Sections deserve praise for the labor that they have freely expended in securing so large and so excellent a series of papers. The Committee of Arrangements also is to be commended for the preparation that they have made to accommodate the Association with its numerous Sections.

The social part of the meeting has not been forgotten. One of the pleasantest features planned by the Committee of Arrangements will be a steamboat excursion on the fourth day of the sessions, given by the Rhode Island Medical Society, to Providence, when the Rhode Island Hospital and Butler Hospital for the Insane will be inspected, and an old-fashioned clambake will be enjoyed at a shore resort on the way back to Newport.

SPECIAL ARTICLE.

OUR MEDICAL COLLEGES.

(*Special Report for* THE JOURNAL.)

BY WM. G. EGGLESTON, M.A., M.D.,
OF CHICAGO, ILL.

In a learned profession, in which the members must continue to learn more and more to be fit to remain in it, there is no place for an uneducated, badly educated, or miseducated person.

In 1880 there were 83,436 physicians, or persons calling themselves physicians, in the United States. Since 1880 there has been an annual increase of more than 5.5 per cent. (not including the increase from foreign increment), while the annual increase of the population is less than 2 per cent. The annual death-rate of physicians is probably a little higher than that of adult males engaged in all other occupations. "It will be within bounds," says Dr. John H. Rauch, "to say that the excess of the percentage of new graduates over the increase of population represents the number of unnecessary recruits to the ranks of the profession every year."

What becomes of the medical graduates? Dr. Rauch, Secretary of the Illinois State Board of Health, shows that more than 7 per cent. of them fail as practitioners, and seek other modes of obtaining a livelihood, within a period of less than ten years after beginning practice. In Chicago, for example, in 1880 certificates from the Illinois State Board of Health were issued to 172 newcomers. In 1885 only 84 of these remained—a loss of 51 per cent. Some of these, of course, removed to other parts of the State; but there could scarcely have been such an hegira as to remove 51 per cent. of a certain number of persons engaged in an occupation within five years, had all been engaged in an occupation suited to them, and for which they were suited.

Dr. Rauch says (1886): "There are from 1,500 to 2,000 physicians in the State of Illinois more than are necessary to supply the legitimate

demands for professional services, and who are not earning a comfortable livelihood from legitimate professional exertion. And what is true of Illinois is probably true of every State in the Union."

From 1877 to 1888 there were 39,910 new graduates in medicine of American colleges (of all kinds), exclusive of Canadian colleges; and when we add to this number the non-graduates that began practice in that time, and the foreign increment, the number that began practice between 1877 and 1889 is most probably increased to 42,000—probably a low estimate. Of these not less than 2,500 have found that they made a mistake in entering the profession. Estimating that these studied medicine for two years, there was a waste of time of at least 5,000 years, and of certainly more than $2,400,000. More than this, 2,500 men had to begin life over again, after having failed once.

The number of physicians in the United States at this time is not less than 112,500 (there are probably 115,000), which gives one doctor to every 533.33 inhabitants. In 1880 the rate was 1 to 601.12. Following is a comparison of the ratio of physicians to population in some of the European countries and in the United States:

Russia (in Europe)	16 : 100,000.
France	29 : 100,000.
Germany	32 : 100,000.
Austria	34 : 100,000.
United Kingdom	61 : 100,000.
United States	187 : 100,000.

It has been said that more than 7 per cent. of the whole number of medical graduates fail as practitioners, and seek other modes of obtaining a livelihood. Non-graduates, says Dr. Rauch, fall out in much larger proportion than the graduates, and the graduates of three-course schools show the smallest percentage of loss, either by removal from the State (Illinois) or by abandonment of practice. This is certainly a significant statement. Seven per cent. is far too large a proportion of men to abandon a profession that requires special and high training. It is also significant that between 1880 and 1886, 1,060 physicians left Illinois after having registered for practice in the State.

There were in round numbers, on July 1, 1877, an aggregate of 7,400 persons practicing medicine in Illinois. Of these about 3,800 were non-graduates, and comprised all classes, from those that had assumed the name of "Doctor" without any medical study or education whatever—often without any other form of education—up to practitioners that had attended one or more courses of lectures, had had some practical anatomy instruction and hospital experience, but had been unable to complete a full term of study or had failed to graduate. The following table gives a comparative exhibit of the status of the profession on July 1, 1877, and July 1, 1887:

Comparison of the total number and classes of Physicians in Practice in Illinois July 1, 1877, and July 1, 1887.

	July 1, 1877.	July 1, 1887.
Number engaged in practice	7400	6180
Graduates and Licentiates	3600	5704
Non-Graduates	3800	476
Percentage of Graduates and Licentiates	48.6	92.3
Percentage of Non-Graduates	51.4	7.7

The proportion of graduated physicians in the State is now nearly double that of ten years ago, and the attainments and qualifications of the practitioners are very much better, owing to the increased thoroughness of the colleges, the longer terms of study, and higher standards of education, resulting largely from the efforts of State Boards of Health, in which efforts the Illinois Board was the pioneer.

The opinion is growing that the day will come when the people of "these nations" of the United States will demand that the National Government take all general educational matters and all matters of public health under its immediate jurisdiction, and will make a Constitutional amendment to that effect. Certainly, if we are one nation and not between three and four dozen, these matters should be under national, not local control. We may agree with Mr. Edward Eggleston that "we must keep the imperial government of the United States for imperial purposes."[1] But these are imperial purposes, because affecting the whole people. It certainly does not seem to be in accordance with any ideas of national welfare that one State without health laws should be a constant menace to the adjoining States that have good health laws. From the standpoint of utility and necessity it is difficult to see any argument in favor of having three dozen pieces of machinery to do work that can be better done by one piece, nor can we see why citizens of one State should suffer remediable wrongs to which the people of the adjacent State are not subjected.

The person in the ordinary walks of life is not able to decide as to the abilities and skill of physicians. He cannot examine the wares of the physician—his services, his skill and knowledge. He cannot price and examine the goods he needs. He must assume that the physician offering for practice is competent and honest. But the State has no right to assume any such thing; it should know before the physician is allowed to practice, and after he begins practice he should be kept up to the mark. The State does not assume that the person wishing to act as a pilot has the necessary knowledge of the waters through which he is to steer vessels; it finds out whether he is competent before he is allowed to practice that calling. The incompetent physician has the advantage of the pilot—and of the public. His errors are not

[1] The Century, September, 1887.

so readily detected, and he does not damage tangible property. People will stand all manner of tamperings with their health and lives, but their purses must not be injured.

When it is said that graduates of three-course schools show the smallest percentage of loss by abandonment of practice (as compared with non-graduates and the graduates of two-course schools), we have the key to the whole matter. Dr. Rauch says: "I have followed up, with especial interest and care, the careers of seven hundred and eighty-nine out of one thousand physicians who studied four years and attended three terms before graduating. These are, with few exceptions, the successful and prominent members of the profession in the different communities in which they reside. They are well equipped by general education, by an ample period of professional study, by didactic and clinical instruction, and by hospital practice. They are successful, as a rule, because they have fitted themselves to command success."

The man that enters upon the practice of medicine after a two years' course of study is handicapped from the very start. At this time, when there is a large number of three-course medical colleges, it must be assumed that when a student enters a two-course college he does so for some special reason; because he has not the money to take him through three courses, or because he wishes to make the practice of medicine a business merely, without regard to the high and sacred duties of the calling, or because he knows that his general education is deficient, and that a two-course school can be graduated from more easily. There are a few cases also, in which a student attends a two-course school with the determination of attending a third, clinical, course elsewhere.

Until recently the recognized course of study of medicine in this country was one year of reading medicine and one or two courses of lectures. Beyond exceptional cases the one year now spent in reading medicine under a preceptor is one year lost, with the gain of slovenly methods of study. If a young man, wishing to spend three years in the study of medicine, can afford but two courses of lectures, it is far better that he take one course first, then read a year, and then take his second course. In this way he will learn during the first year how and what to study at home, which he does not learn under the average preceptor. But even in this way the student cannot learn enough of medicine to go out as a competent practitioner. The graduate of the two-course school too seldom has sufficient training to appreciate the nobility of his calling, and is likely to view it too much from the dollar-and-cent standpoint.

Medicine is so broad, and so continuously broadening, that at least three years of medical study are necessary to prepare the student for practice; and more than three years, if there be defects in his general education. By "general education" is not meant the ability to read Latin at sight, nor to solve problems in algebraic geometry or differential and integral calculus. The brain-tools that a student needs for entering upon the study of medicine to-day are a thorough knowledge of English, a good working knowledge of chemistry, physics (the sciences), German and French, with some knowledge of Latin and Greek. These tools he must have in order to carry on his work properly and with advantage to himself and the public. The methods, the periods and the tools of study of thirty years ago are now inadequate, and students that are using them are not fitted for practice. The good standard of thirty years ago is now a low standard, and this, and the absence of uniform legal requirements for the study and practice of medicine are almost exclusively responsible for the present over-crowded state of the profession, and for the many failures of the men entering it.

It may be asked why there is such a multitude of medical colleges in this country. From the standpoint of necessity one hundred and eighteen colleges, of all kinds, is a vast number for a country containing about sixty million people. One of the American methods of "founding" a medical college is thus described by Dr. S. Guttmann, in Dr. Paul Börner's "Reichs-Medicinal-Kalendar für Deutschland auf das Jahr 1888:" "Um ein College zu gründen, vereinigen sich gewöhnlich mehrere Aerzte, von denen jeder ein Fach der Medicin als Docent übernimmt; oft finden sich auch reiche Leute, welche ein College stiften (häufig nur, um so ihren Namen der Nachwelt zu erhalten)! Der Gouverneur des bettreffenden Staates ertheilt dann die Erlaubniss zur Eröffnung der Schule. Damit hat dann auch jedes einzelne College das Recht, Diplome auszustellen."

The medical colleges should be placed beyond the temptation of bidding for students and fees by offering low standards, short courses and easy examinations. The surest way to raise medical education to the proper standard is to have a required standard for admission to the colleges, fixed by law, and a law that covers the entire territory of the United States; a required and fixed number of courses in the colleges, and a required number of examinations, without passing which no student should be allowed to proceed; a required number of practical courses; and by taking the examining and licensing power out of the hands of the professors of the colleges. Every one intending to practice medicine should be required to register as a student of medicine at a stated time before entering any medical college, and in order to be registered he should be required to show that his general education and his character will warrant his admission to registration.

The licensing and examining power should be vested in State Boards of Medical Examiners, who should be elected by the Medical Societies of the separate States, but never appointed by political power. A license from one State Board should be good for any State or Territory.

A good deal has been said by physicians (especially by those that seem opposed to legislative interference with medical education and the medical colleges), about the law of supply and demand. The law of supply and demand has nothing to do with the production of medical graduates, and chiefly for the reason that the public does not purchase its supply from the manufacturers. Could the medical colleges go into the market and offer so many first-class, or so many second-rate graduates, as if they were a lot of shoes, at a certain price, discount for cash, and with a certainty of gain to themselves if the whole crop should be sold, and a certainty of loss if it should not be sold, then demand would regulate both supply and quality. But such is not the case; the college takes the student's money, gives him a diploma and turns him adrift, regardless of what becomes of him afterwards. Supply and demand have no more to do with the regulation of the number of graduates than has the free agency of potatoes to do with their production and growth.

To a certain extent there is a supply and demand system that is arousing the low-grade colleges of the country to a sense of their duty. Intelligent students, and those that know of the medical laws of the States in which they intend to practice, are beginning to see the necessity of obtaining their medical education in the higher-grade colleges. There are, however, a great many students that only know that they wish to become doctors, and as soon as possible. The diploma is their chief end and aim, without regard to the amount of knowledge they should have. Such men do not think, nor do they know, that they are handicapping themselves for life.

There is a demand for high-grade medical men (that is, there is always room for them), and the demand will increase in proportion as the public recognizes the difference between the dearness of the low-grade man at any price, and the cheapness of the high-grade man at even a very high figure.

Prevention, as every one knows, is better than cure, however brilliant the cure may be. Better keep the ignorant man out of the profession altogether than try to patch up his deficient education in a medical college, or hope that in spite of his defects he may do fairly well after all. Almost all the laws regulating the practice of medicine have in view the two ends of discouraging and preventing the uneducated man from beginning the study of medicine, and of preventing him from practicing medicine after he has obtained a diploma from a low-grade college.

A most objectionable feature of many medical colleges is that of selling to the student the same goods over and over again, two or three years in succession. In the colleges that have not adopted the graded system of instruction the courses of lectures and study are precisely the same in length and subject, so that the student in his second course knows that Prof. A. will tell a certain story next Monday at twenty minutes past eleven. Perhaps there are some students that think this proper, but it is difficult to see how any teacher can think so. There is no more reason why the course of medical instruction should not be graded, than that the academic or any technical course should not be mixed into a heterogeneous mass and thus forced into the student.

In the "Report on Medical Education, Medical Colleges, and the Regulation of the Practice of Medicine in the United States and Canada: 1765–1889," issued by the Illinois State Board of Health, is listed a total of 267 medical institutions—251 in the United Sates, and 16 in Canada—including three that do not confer degrees. The total number now in existence, exclusive of the three that do not confer degrees, is 131—118 in the United States and 13 in Canada. Of these there are 103 regular medical schools that teach and (practically) confer degrees, as may be seen by the large table given. Granting for a moment that we have need of so many medical colleges, do we need any more? European countries are more densely populated than America, yet look at this table:

Ratio of Medical Schools to Population.

Austria	1 : 6,032,421.[1]
Belgium	1 : 1,384,163.
Denmark	1 : 1,969,039.
France	1 : 4,513,223.[2]
Germany	1 : 2,350,000.
Italy	1 : 1,353,671.
Japan	1 : 1,716,920.
Norway	1 : 1,806,500.
Mexico	1 : 1,100,890.
Netherlands	1 : 1,015,142.
Portugal	1 : 1,449,517.
Russia (in Europe)	1 : 8,750,000.
Spain	1 : 1,662,586.
Sweden	1 : 1,526,300.
Switzerland	1 : 948,700.
United Kingdom	1 : 844,444.
United States	1 : 518,846.[3]

The schools of Austria, Belgium, France, Germany, and the United Kingdom are attended by a very large number of foreign students, while the number of foreign students that come to American schools is very small.

We now have about 8.4 people to the square kilo.; when there shall be in this country a population of 40 people to the sq. kilo., we will then have, with 118 medical colleges of all kinds (exclusive of preparatory schools) 1 college to 2,572,-

[1] Excluding Austro-Hungary.
[2] Excluding preparatory schools.
[3] Excluding one preparatory school.

177 people. The average for the sixteen foreign countries enumerated is 1 college to 2,401,469 people, and certainly no one can say that this is too low. We have, then, in the United States as many colleges as are sufficient to educate medical men for 300,000,000 people, assuming that the average ratio for foreign countries represents a sufficiency. We thus have eighty-nine colleges more than we have any need for at present, and thirty more than we will need when our population is three times as great as at present!

It has been repeatedly said, by persons unfamiliar with the facts, that medical education will regulate itself. This statement is easily disproved by the fact that it has not regulated itself, and by looking at the results of medical legislation in this country, little of such legislation as we have had. Medical diplomas of 1885–1886 were presented to the Illinois State Board of Health from 60 medical schools, as compared with diplomas from 54 schools of the session of 1884–85. Graduates of 14 of the 60 schools were required to supplement their diplomas by passing examination before the Board in branches or subjects of the "Schedule of Minimum Requirements" omitted in the curricula or requirements of their respective colleges. In 1884, however, 37 schools were represented before the Illinois State Board of Health, and the graduates of 21 of these had to submit to such examinations. In 1885, 50 schools were represented, and graduates of 15 of these had to be examined. We thus see that there was a constantly diminishing percentage of conditioned graduates, and it may be asserted that this was due solely to the requirements of the State Boards.

The reports of the Boards of Medical Examiners of Virginia and North Carolina show how low is the standard of medical education in this country. In 1886 there were 63 applicants for license before the Board of Examiners of North Carolina; 17 were rejected—26.99 per cent. In 1887 there were 48 applicants; 14 were rejected—29.17 per cent. Of the 34 that passed the examinations 32 were regular graduates. Of the 14 that did not pass 8, or 59.14 per cent., were graduates. In 1888 there were 53 applicants; 17, or 32.07 per cent., failed to pass. Of the 36 that passed 35 were graduates. Of the 17 rejected 12, or 70.58 per cent., were graduates. In 1887 and 1888 there were thus 101 applicants, 87 graduates and 14 non-graduates; 22.98 per cent. of the graduates failed to pass, while 78.57 per cent. of the non-graduates failed.

Since the organization of the Medical Examining Board of Virginia, January 1, 1885,[1] there have been 223 applicants in all, 49 being rejected—21.97 per cent. Of the 223 applicants 212 were graduates; 45 were rejected—21.69 per cent. There were 11 non-graduate applicants, 4 of whom were rejected—36.36 per cent.,—and 2 had not completed their examinations at the time of the report. In the table are given the names of 27 colleges from which applicants have come before the Board; excluding the University of Heidelberg, we have 26 American colleges; 13 of these sent 51 applicants, all of whom passed; 13 others sent 156 applicants, with an average of 34.73 per cent. of each rejected—more than one-third. Of the 45 rejected graduates, 21, or 46.66 per cent. (from 8 colleges) applied for a second examination; of these 9, or 42.85 per cent., failed a second time. We thus see that the Board held 228 examinations of graduates of American colleges, and rejected 23.68 per cent., "a percentage which might be increased considerably if practical examinations were instituted in the practical branches."

The percentage of graduates to matriculates in American Colleges now averages 30.5. The average for the colleges whose students failed before the Virginia Board is 34.12—3.62 per cent. higher than the general average; for the colleges whose students passed, 28.53—1.97 per cent. lower than average. The colleges whose graduates failed, then, graduate 5.59 per cent. more of their matriculates than the colleges whose graduates passed. Colleges whose graduates failed average 2.07 courses of 22.44 weeks each; others 2.61 courses of 25.84 weeks each. Average for American courses is 24.9 weeks; average course of colleges whose candidates failed is 2.46 weeks less—of others .14 week more, or 3.46 weeks longer than the course of the other colleges.

Counting first and second applicants, we see that 228 graduates were examined, and 54 failed —23.68 per cent. From 1877 to 1887 inclusive there were 36,097 graduates from medical colleges of the United States. They held documents that are considered as entitling to practice in the majority of our States and Territories. But according to the above figures, if these 36,097 had gone before an efficient examining board, *8,300 would have been rejected!* Can any one wish for better proof that the colleges, (as a class) are not regulating themselves, but need regulation, and a great deal of it?

In the Fifth Report of the Illinois State Board of Health on Medical Education it is shown that the total number of colleges that exact certain educational qualifications as a condition of matriculation is 117; the number that exacted such qualifications before the "Schedule of Minimum Requirements" went into effect in 1882–83 was 45. The number of schools that required attendance on three or more courses of lectures as a condition of graduation was 22 in 1882–83; in 1886, 41, and 47 in 1888–89. From 1882–83 to 1889 the average duration of the lecture terms in the colleges in this country increased from 23.5 to 25.3 weeks. In this time the number of

[1] To January, 1889.

schools that taught hygiene increased from 42 to 117; the number that taught medical jurisprudence increased from 61 to 112. The number of schools having sessions of five months or more increased from 101 to 115; and the number having sessions of six months or more increased from 42 to 66. Does this look like self-regulation of the medical colleges? The colleges, with very few exceptions, have been forced into all the improvements that they have made in their courses and teaching.

The effect of the improvement in methods of instruction and of the higher qualifications demanded before graduating the student is best seen *in the diminishing percentage of* graduates to matriculates. The tables embraced in the January, 1889, Illinois Report cover a sufficiently long period—from 1877 to 1888 inclusive—and deal with large enough numbers—130,545 matriculates and 42,633 graduates—to give them a positive value for this purpose. Notwithstanding the growth of population, the total number of medical students never reached the proportions attained in 1882–83 until 1887–88. The sessions of the 1882–83 were attended by 13,088 students; of 1883–4 by 12,763 students; of 1884–5 by 11,975 students; of 1885–6 by 12,321 students; of 1886–7 by 12,948 students; and of 1887–88 by 14,016. The effect of a higher standard of qualifications for graduation is further shown in the diminishing percentage of graduates to the total number of students. In 1882–83 out of every 1,000 matriculates 322 were graduated, taking both the United States and Canada and all schools of practice into the account. In 1886–87 only 294 out of every 1,000 matriculates were graduated, and in 1887–88, 297. In the United States alone in 1882–83 out of every 1,000 matriculates 331 were graduated, while in 1886–87 only 306 out of every 1,000 matriculates were graduated, and in 1887–88, only 303. The percentage of matriculates to graduates has therefore decreased, in the United States, from 34.6 to 30.5. In Canada the percentage has increased from 15.8 to 22.7.

In all other countries in which there is any pretense to civilization medical education is strictly regulated by law. A good preliminary education is an absolute prerequisite to the study of medicine. As a rule, too, the course of medical study is twice as long as in this country; the course of study is graded; the examinations are both theoretical and practical; and in most cases the candidate for graduation and for license to practice must have had considerable hospital experience. In this country, on the other hand, it is the rare exception for a school to require such a preliminary education as is universally required in foreign countries; it is the exception for the candidate to stand practical examinations, to have good practical instruction during his course; and it is very seldom that the graduate has had any hospital experience. Now admitting, even for a moment, and for the sake of argument, that the brain of the American youth is a vastly superior article to that of any foreign-born youth, it may be asked if its superiority is so great as to make up for the American defects in medical education? They that have had experience with American and foreign brains will not hesitate to answer in the negative. And judging from the American and foreign medical literature, the conclusion must be that the foreign brains are the better article as a rule, or that the native brains are handicapped by educational defects.

Anyone that examines the preliminary requirements for matriculation and for graduation of, say, Canadian medical colleges and those of this country must be struck with the great advance of the former over the latter. When an intelligent person compares the standard of medical education in foreign countries with the standard of the large majority of the colleges in the United States, he is compelled to blush for his country. And not only are the foreign standards higher, but in reality more branches pertaining to medicine are taught in foreign colleges.

As may be seen from the tabulated statement of the colleges, our students have far too insufficient instruction in practical subjects. One can no more be fitted to practice medicine by listening to lectures than he can learn mineralogy by looking at magic-lantern views of the cañons of Colorado. Before a student is graduated in medicine he should be taught to take histories of cases, to make a thorough examination of patients, to make a diagnosis in actual cases, to mark out the treatment, and to perform operations.

It is an idle dream to suppose that one can learn theoretical and practical medicine in two or even three years. Besides the commonsense view of it, if medicine could be learned in this time, it is probable that the governments of foreign countries would have found it out several years ago, and would have adopted our short courses. There should be a fourth year, devoted entirely to practical work, and a fifth year would be all the better.

With few exceptions the examinations in this country are conducted in such a manner as to offer every advantage to students with retentive memories, the "crammers," but none to the hard-working student that really knows what he has studied, but with a memory not so retentive. The average graduate in medicine from an American college has book medicine—"canned science" pretty well in his head, but the number that know medicine practically—so far as they have gone—I believe to be very limited. It is not pertinent to say that the young graduate will learn more in time; of course he will, and must. But he should not acquire all his knowledge of *practical* medicine after he begins practice.

Number.	NAME AND LOCATION OF COLLEGE.	Organized.	Weeks in Regular Term.	Terms in Full Course.	Matriculation Requirements.		Graduation		
					Age.	Educational.	Years of Study.	No. regular Courses.	Dissection Courses.
1	Alabama . . . . . Medical College of Alabama, Mobile	1859	. .	. .	. .	. . . . .	. .	. .	. .
2	Arkansas . . . . . Medical Department Arkansas Industrial University, Little Rock	1879	20	2	. . .	C. S. c.	3	2	2
3	California . . . . . Cooper Medical College, San Francisco	1859	20	3	18	T. c.	3	3	2
4	" . . . . . Medical Department University of California, San Francisco	1863	22	3	18	H. S. d.	3	3	2
5	" . . . . . College of Medicine Univ. of Southern California, Los Angeles	1883	24	3	18	H. S. d.	3	3	2
6	Canada . . . . . University of Toronto, Toronto	1843	24	4	16	U. d.	4	4	2
7	" . . . . . Trinity Medical College, Toronto	1850	27	3	. . .	. . . . .	4	3	2
8	" . . . . . Royal College Physicians and Surgeons, Kingston	1854	25	4	. . .	T. c.	4	4	2
9	" . . . . . Medical Department Western University, London	1882	20	4	17	H. S. d.	4	4	2
10	" . . . . . Woman's Medical College, Toronto	1883	24	4	. . .	C. S. c.	4	4	2
11	" . . . . . " " " Kingston	1883	27	4	17	H. S. d.	4	4	2
12	" . . . . . McGill University, Montreal	1824	26	4	. . .	H. S. d.	4	4	2
13	" . . . . . Ecole de Médecine et de Chirurgie, Montreal	1843	6 mos	4	. . .	C. d.	4	4	2
14	" . . . . . Laval University, Montreal	1852	36	4	18	Ex.	4	.	2
15	" . . . . . University Bishop's College, Montreal	1870	24	4	. . .	Ex.	4	4	2
16	Nova Scotia . . . . Halifax Medical College, Halifax	1867	23	4	16	T. L.	4	4	2
17	Manitoba . . . . . Manitoba Medical College, Winnipeg	1883	28	4	. . .	. . . . .	4	4	2
18	Colorado . . . . . University of Denver, Denver	1881	26	2	. . .	H. S. d.	3	2	2
19	" . . . . . University of Colorado, Boulder	1883	33	2	. . .	H. S. d.	3	2	2
20	" . . . . . Gross Medical College, Denver	1887	23	2	. . .	C. S. c.	3	2	2
21	Connecticut . . . . Gale University, New Haven	1812	34	3	18	H. S. d.	3	2	2
22	Dist. of Columbia. National Medical College, Washington	1821	20	3	. . .	H. S. d.	3	3	2
23	" " University of Georgetown, Georgetown	1850	30	3	. . .	H. S. d.	3	3	2
24	" " Howard University, Washington	1867	20	3	20	C. S. c.	3	3	2
25	" " Medical Department National University, Washington	1884	31	3	18	H. S. d.	3	3	2
26	Georgia . . . . . Medical College of Georgia, Augusta	1829	20	2	. . .	None.	3	2	1
27	" . . . . . Atlanta Medical College, Atlanta	1854	20	2	. . .	None.	2	2	1
28	" . . . . . Southern Medical College, Atlanta	1879	20	2	20	. . . . .	2	2	1
29	Illinois . . . . . Rush Medical College, Chicago	1842	. .	. .	. .	. . . . .	. .	. .	. .
30	" . . . . . Chicago Medical College, Chicago	1859	30	3	18	C. S. c.	3	3	2
31	" . . . . . Woman's Medical College of Chicago	1870	. .	. .	. .	. . . . .	. .	. .	. .
32	" . . . . . College of Physicians and Surgeons of Chicago	1882	. .	. .	. .	. . . . .	. .	. .	. .
33	" . . . . . Chaddock School of Medicine, Quincy	1882	20	3	17	C. S. c.	4	3	2
34	Indiana . . . . . Medical College of Indiana, Indianapolis	1878	. .	. .	. .	. . . . .	. .	. .	. .
35	" . . . . . Central College of Physicians and Surgeons, Indianapolis	1879	22	2	. . .	C. S. c.	3	2	3
36	" . . . . . Fort Wayne College of Medicine, Fort Wayne	1879	22	2	. . .	C. S. c.	3	2	1
37	Iowa . . . . . College of Physicians and Surgeons, Keokuk	1850	. .	. .	. .	. . . . .	. .	. .	. .
38	" . . . . . Medical Department State University of Iowa, Iowa City	1870	. .	. .	. .	. . . . .	. .	. .	. .
39	" . . . . . Iowa College of Physicians and Surgeons, Des Moines	1882	21	3	. . .	C. S. c.	4	3	2
40	Kentucky . . . . . University of Louisville, Medical Department, Louisville	1837	. .	. .	. .	. . . . .	. .	. .	. .
41	" . . . . . Kentucky School of Medicine, Louisville	1850	20	. .	. .	T. c.	3	2	2
42	" . . . . . Louisville Medical College, Louisville	1869	24	2	19	T. c.	3	2	2
43	" . . . . . Hospital College of Medicine, Louisville	1873	20	2	. . .	C. S. c.	3	2	2
44	Louisiana . . . . . Medical Department Tulane University, New Orleans	1834	23	2	. . .	. . . . .	3	2	2
45	Maine . . . . . Medical School of Maine, Brunswick	1820	20	. .	18	H. S. d.	3	2	2
46	Maryland . . . . . University of Maryland, School of Medicine, Baltimore	1807	. .	. .	. .	. . . . .	. .	. .	. .
47	" . . . . . College of Physicians and Surgeons, Baltimore	1872	24	2	. . .	None.	3	2	2
48	" . . . . . Baltimore Medical College, Baltimore	1881	26	2	19	None.	3	2	2
49	" . . . . . Woman's Medical College of Baltimore	1882	28	3	18	C. S. c.	3	3	2
50	" . . . . . Baltimore University, School of Medicine, Baltimore	1884	. .	. .	. .	. . . . .	. .	. .	. .
51	Massachusetts . . . Harvard University Medical School, Boston	1782	40	3	. . .	C. D.	3	. .	. .
52	" . . . . . College of Physicians and Surgeons, Boston	1880	24	3	18	C. S. d.	3	2	1
53	Michigan . . . . . Department of Med. and Surgery, Univ. of Michigan, Ann Arbor	1850	36	3	. . .	H. S. d.	3	3	2
54	" . . . . . Detroit College of Medicine, Detroit	1885	26	2	18	H. S. d.	3	2	. .
55	" . . . . . Michigan College of Medicine and Surgery, Detroit	1888	26	2	18	C. S. c.	3	2	2
56	Minnesota . . . . . Minneapolis College of Physicians and Surgeons, Minneapolis	1883	26	3	. . .	C. S. c.	. .	3	2
57	" . . . . . College of Medicine and Surgery, Minneapolis	1883	26	3	. . .	T. c.	3	3	. .
58	Missouri . . . . . Missouri Medical College, St. Louis	1840	. .	. .	. .	. . . . .	. .	. .	. .
59	" . . . . . St. Louis Medical College, St. Louis	1841	34	3	17	C. S. c.	. .	3	3
60	" . . . . . Kansas City Medical College, Kansas City	1869	23	2	19	H. S. d.	3	2	2
61	" . . . . . St. Louis College, Physicians and Surgeons, St. Louis	1869	24	2	18	H. S. d.	3	2	2
62	" . . . . . Northwestern Medical College, St. Joseph	1880	22	2	19	H. S. d.	3	2	2
63	" . . . . . University of Kansas City, Medical Department, Kansas City	1881	26	2	17	H. S. d.	3	2	2
64	" . . . . . Ensworth Medical College, St. Joseph	1882	24	2	. . .	C. S. c.	3	2	2
65	" . . . . . Beaumont Hospital Medical College, St. Louis	1886	24	2	. . .	C. S. c.	3	2	2
66	Nebraska . . . . . Omaha Medical College, Omaha	1881	25	2	18	T. c.	3	2	. .
67	New Hampshire . Dartmouth Medical College, Hanover	1797	20	2	18	H. S. d.	3	2	. .
68	New York . . . . . College of Physicians and Surgeons, New York	1807	37	3	. . .	C. S. s.	3	3	2
69	" . . . . . Albany Medical College, Albany	1838	25	3	18	T. c.	3	3	1
70	" . . . . . University City of New York, Medical Department, New York	1841	. .	. .	. .	. . . . .	. .	. .	. .
71	" . . . . . Medical Department University of Buffalo, Buffalo	1846	24	2	18	C. S. c.	3	2	2
72	" . . . . . Long Island College Hospital, Brooklyn	1858	24	2	18	None.	3	2	. .
73	" . . . . . Bellevue Hospital Medical College, New York	1861	. .	. .	. .	. . . . .	. .	. .	. .
74	" . . . . . Woman's Medical College of the N. Y. Infirmary, New York	1868	32	2	. . .	H. S. d.	3	3	. .
75	" . . . . . College of Medicine of Syracuse University, Syracuse	1872	19	. .	18	C. S. c.	3	. .	1 or 2
76	" . . . . . Medical Department of Niagara University, Buffalo	1883	28	3	. . .	H. S. c.	3	3	2
77	North Carolina . . Leonard Medical School, Raleigh	1882	. .	. .	. .	. . . . .	. .	. .	. .
78	Ohio . . . . . Medical College of Ohio, Cincinnati	1819	22	2	18	C. S. c.	3	2	2
79	" . . . . . Western Reserve University, Medical Department, Cleveland	1843	24	3	18	T. c.	3	3	2
80	" . . . . . Starling Medical College, Columbus	1847	24	2	. . .	C. S. c.	3	2	1
81	" . . . . . Cincinnati College of Medicine and Surgery, Cincinnati	1849	22	2	. . .	C. S. c.	3	2	2
82	" . . . . . Miami Medical College, Cincinnati	1852	24	2	. . .	C. S. c.	3	2	. .
83	" . . . . . Medical Department University of Wooster, Cleveland	1863	. .	. .	. .	. . . . .	. .	. .	. .
84	" . . . . . Columbus Medical College, Columbus	1875	26	2	. . .	None.	3	2	2
85	" . . . . . Toledo Medical College, Toledo	1883	24	3	18	C. S. c.	3	3	2
86	" . . . . . Northwestern Ohio Medical College, Toledo	1883	24	2	18	C. S. d.	3	2	2
87	" . . . . . Woman's Medical College of Cincinnati, Cincinnati	1887	20	. .	. .	C. S. c.	3	2	2
88	Oregon . . . . . Medical Department Willamette University, Portland	1864	26	3	19	C. S. c.	3	3	3

NOUNCEMENT FOR 1889–90

TION REQUIREMENTS.							OBLIGATORY PRACTICAL AND LABORATORY COURSES.													
Dissection Required.	Hospital Work Required.	Clinical Work Required.	Hygiene Taught?	Medical Jurisprudence?	Graded Course.	No. beds at command for Clinical Instruction.	Surgery.	Obstetrics.	Gynecology.	Chemistry.	Pharmacy.	Physiology.	Histology.	Pathology.	Bacteriology.	Physical Diagnosis.	Post mort. Exam't'n.	No. Instructors.	Women Admitted?	Practical Examinations.	Number.
Whole body	Yes	Yes	Yes	yes	no	50	yes	yes	yes	no	no	no	no	no	no	yes	yes	14	no	yes	2
Whole body	Yes	Yes	Yes	yes	no	262	yes	yes	yes	yes	no	no	yes	yes	no	yes	yes	16	yes	yes	3
Whole body			Yes	yes	yes	250				yes	no	no	yes	yes	yes		no	18	no		4
Whole body	Yes	Yes	Yes	yes	yes	300	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	20	yes	yes	5
Whole body	24 mos.	12 mos.	Yes	yes	yes	350	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	33	no	yes	6
Whole body	18 mos.	2 years.	Yes	yes	yes	275	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes		no	yes	7
Whole body twice.	24 mos.	26 mos.	Yes	yes	yes	100	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	14	no	yes	8
One subject	3 years.		Yes	yes	yes	100	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	17	no	yes	9
Six parts	24 mos.	24 mos.	Yes	yes	yes	375	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	19	yes	yes	10
Whole body	24 mos.	24 mos.	Yes	yes	yes	250	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	13	yes	yes	11
Indefinite	18 mos.	Yes	Yes	yes	yes	175	no	yes	yes	yes	yes	yes	yes	no	no	yes	yes	23	no	no	12
Six parts	18 mos.	Yes	Yes	yes	yes	250	yes	yes	yes				yes	yes		yes	yes	15		yes	13
Four subjects	Yes	Yes	Yes	yes	yes	100	yes	yes	no	yes	no	no	yes	yes	yes	yes	no	17	no	yes	14
Six extremities	Yes	Yes	Yes	yes	yes	200	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	16	no	yes	15
Body twice	Yes	Yes	Yes	yes	no	120	no	yes	no	yes	no	no	no	no	no	yes	no	16	yes	yes	16
Body twice			Yes	yes		100															17
	No	Yes	Yes	yes	no	300	no	no	no	no	no	no	no	no	no	yes	no	20	yes	yes	18
Whole subject	No	No	Yes	yes	no	24	yes	no	no	yes	no	no	yes	yes	no	yes	no	16	yes	no	19
Whole subject	Yes	Yes	No	yes	no	100	yes	yes	yes	yes	yes	no	yes	no	no	yes	yes	12	yes	yes	20
Three parts	Yes	Yes	Yes	yes	yes	125	yes	yes	no	yes	no	yes	yes	yes	yes	yes	yes	19	no	no	21
Four parts	Yes	Yes	No	yes	yes	250	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	24	yes	yes	22
Three parts	No	No	Yes	yes	yes	300	yes	yes	yes	yes	no	yes	yes	yes	no	no	no	23	no	no	23
Three parts	Yes	Yes	No	yes	yes	300	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	8	yes	yes	24
Whole subject	No	Yes	Yes	yes	yes	?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	18	yes	yes	25
Indefinite	No	No	No	yes	no	55	no	no	no	no	no	no	no	no	no	no	no	9	no	no	26
Whole subject	No	Yes	Yes	no	no	10	yes	yes	yes	no	no	no	no	no	no		no	12	no	no	27
Six parts	Yes	No	Yes	yes	no	30	yes	yes	yes	yes	no	no	yes	yes	no	yes	no	14	no	no	28
																					29
Half subject	Yes	Yes	Yes	yes	yes	250	yes	yes	yes	yes	no	no	yes	yes	no	yes	no	26	no	no	30
																					31
	No	No	Yes	yes	no	none	no	no	no	yes	no	no	no	no	no	no	no	12	yes	no	32
																					33
Three parts	Yes	No	Yes	yes	no	?	yes	no	yes	yes	yes	no	yes	no	no	yes	no	15	yes	no	34
One subject	?	No	Yes	yes	no		yes	no	no	no	no	no	no	no	no	yes	yes	11	yes	no	35
																					36
	No	Yes?	Yes	yes	yes	25	yes	no	yes	yes	yes	yes	yes	yes	no	yes	no	15	yes	yes	37
																					38
Whole body	No	No	Yes	yes	no	400	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	18	no	no	39
Whole body	Yes	Yes	Yes	yes	no	250	yes	no	no	yes	yes	no	no	no	no	yes	no	15	no	no	40
Two subjects	No	Yes	Yes	yes	no	350	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	15	no	no	41
	Yes	Yes	Yes	no	no	80–100	no	no	no	yes	no	no	no	no	no	no	no	23	no	?	42
Two parts	No	No	Yes	yes	no	none	no	no	no	no	no	no	no	no	no	no	no	8	no	no	43
																					44
Indefinite	None	No	Yes	yes	no		no	yes	no	yes	yes	yes	yes	no	yes	no	no	17	no	no	45
One subject	Yes	Yes	Yes	yes	no	75	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	22	no	yes	46
One subject	No	Yes	Yes	yes	yes	20	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	no	17		yes	47
																					48
Three parts			Yes	yes	yes		yes	yes	no	yes	no	no	no	no	no	no	no	40	no		49
One part	No	No	Yes	yes	no	none	no	no	no	yes	no	no	no	no	no	yes	no	11	yes	yes	50
Whole body	1 year.	1 year	Yes	yes	yes	800	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	21	yes	yes	51
Whole body			Yes	yes	no	235				yes	yes	yes	yes	yes	yes			36	no		52
Two parts	Yes	Yes	Yes	yes	no	80	yes	yes	yes	yes	no	yes	yes	no	no	yes	no	12	yes	no	53
Whole subject	Yes	Yes	Yes	yes	yes	40	yes	yes	yes	yes	yes	no	no	no	yes	yes	no	23	yes	yes	54
Three parts	Yes	Yes	Yes	yes	yes		yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	30	yes	no	55
																					56
	No	No	Yes	yes	yes	1000	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	32	no	no	57
Two subjects	No	Yes	Yes	no	no	100	no	yes	no	yes	no	no	yes	yes	no	yes	no	21	no	yes	58
Whole body	Yes	Yes	Yes	yes	no		yes	yes	yes	no	no	no	no	no	no	yes	no	15	no	yes	59
All parts	Yes	Yes	Yes	yes	no	75	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	12	no	yes	60
All parts	No	Yes	Yes	yes	no	none	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	16	no	yes	61
All parts	No	No	Yes	yes	no	200	yes	no	no	no	no	no	yes	no	no	yes	no	15	yes	yes	62
Indefinite	Yes	Yes	Yes	yes	yes	500	yes	no	yes	yes	no	yes	yes	yes	yes	yes	no	19	no	no	63
All parts	Yes	Yes	Yes	yes	no	100	yes	yes	no	yes	no	no	no	no	no	yes	no	17	no	no	64
All parts	No	No	Yes	yes	no	none	no	no	no	yes	no	no	no	no	no	no	no		no	no	65
	None	Yes	Yes	yes	no		yes	yes	yes	yes	no	no	yes	yes	yes	yes	no	78	no	no	66
	Yes	Yes	Yes	yes	yes	150	yes	yes	yes	yes	no	no	yes	yes	no	yes	no	22	no	no	67
																					68
Half subject	Yes	Yes	Yes	yes	no	100	no	no	no	yes	no	no	yes	yes	no	no	no	30	yes	no	69
All parts	Yes	Yes	Yes	yes	no		yes	yes	yes	yes	no	no	yes	yes	no	yes	no	50	no	yes	70
																					71
Six parts	Yes	Yes	Yes	no	yes	40	yes	yes	yes	yes	no	yes	yes	yes	no	yes	no	28	yes	yes	72
Whole subject	No	No	No	yes	yes	150	no	no	no	yes	no	yes	yes	yes	no	yes	no	24	yes	yes	73
Half subject twice	Yes	Yes	Yes	yes	yes	195	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	no	19	no	yes	74
																					75
			Yes	yes	no	650															76
Three parts	No	No	Yes	yes	yes	175	no	yes	no	yes	no	yes	yes	yes	no	yes	no	17	no	no	77
All parts	Yes	Yes	Yes	yes	no	150	yes	yes	yes	yes	no	yes	yes	yes	no	yes	no	22	no	no	78
Two parts	No	No	Yes	yes	no		yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	16	no	yes	79
One subject	Yes	No	Yes	no	no	450	no	no	no	yes	no	no	no	no	no	no	no	25	no	no	80
																					81
All parts	Yes	Yes	Yes	yes	no	350	yes	yes	yes	yes	no	yes	yes	yes	no	yes	no	18	no	no	82
Whole body	Yes	Yes	Yes	yes	yes	50	yes	yes	yes	yes	no	yes	yes	yes	no	yes	yes	16	yes	no	83
Whole body	Yes	?	Yes	yes	no	250	no	yes	no	yes	no	yes	yes	yes	no	yes	no	17	no	no	84
		No	Yes	no	no					yes	yes	yes	yes	yes	no		no	16	yes		85
Whole subject	No	No	Yes	yes	no	100	no	no	no	yes	no	no	no	yes	no	yes	yes	14	yes	no	86
																					87
																					88

THE JOURNAL MEDICAL COLLEGE AN-

Number.	NAME AND LOCATION OF COLLEGE.	Organized.	Weeks in Regular Term.	Terms in Full Course.	Matriculation Requirements.		Gradua-		
					Age.	Educational.	Years of Study.	No. regular Courses.	Dissection Courses.
89	Oregon . . . . . University of State of Oregon, Medical Department	1887	25	2	. . .	H. S. d.	3	2	1
90	Pennsylvania . . . University of Pennsylvania, Departm't of Medicine, Philadelphia.	1765	30	3	. . .	T. c.	3	3	2
91	" . . . Jefferson Medical College, Philadelphia	1826	28	3	. . .	. . . . .	3	2	2
92	" . . . Woman's Medical College of Pennsylvania, Philadelphia	1850	32	3	. . .	H. S. d.	3	3	2
93	" . . . Medico-Chirurgical College of Philadelphia, Philadelphia	1881	26	3	18	C. S. c.	3	3	2
94	" . . . Western Pennsylvania Medical College, Pittsburgh.	1886	26	2	. . .	T. c.	3	2	2
95	South Carolina . . Medical College of State of South Carolina, Charleston.	1832	25	2	19	C. S. c.	3	2	2
96	Tennessee. . . . . Med. Departm'ts Univ. Nashville and Vanderbilt Univ., Nashville.	1850	22	2	. . .	?	3	2	1
97	" . . . . . Medical Department University of Tennessee, Nashville.	1876	24	2	. . .	C. S. c.	3	2	2
98	" . . . . . Meharry Medical Department, Central Tenn. College, Nashville. .	1876	20	3	18	N. S. d.	3	3	2
99	" . . . . . Memphis Hospital Medical College, Memphis	1880	20	2	. . .	None.	. .	2	1
100	Texas. . . . . Texas Medical College and Hospital, Galveston.	1864	24	. .	. . .	C. S. c.	3	3	2
101	Vermont . . . . . Medical Department of University of Vermont, Burlington . . .	1823	20	2	. . .	C. S. c.	3	2	. .
102	Virginia . . . . . University of Virginia, Charlottesville.	1825	. .	. .	. . .	. . . . .	. .	. .	. .
103	" . . . . . Medical College of Virginia, Richmond.	1838	25	3	18	?	1	2	. .

EXPLANATION OF TABLE.

Terms in full course means the *least* number of terms that a candidate for graduation may take.

Educational Requirements for Matriculation.—T. c. means teacher's certiffcate; C. S. c., common school certificate; H. S. d., high school diploma; U. d., university diploma; N. S. d., normal school diploma. In each case the lowest substitute for an examination was given.

In regard to the Obligatory and Laboratory Courses, the following was sent to the colleges by way of explanation:

Hospital work required.—By this is meant: Is each student required to examine and prescribe for patients, under the direction of a teacher, in a hospital?

Clinical work required.—We do *not* refer to clinical lectures, but to actual clinical work done by the student.

Is your course graded, i. e., is a graded course compulsory?

Practical Surgery.—Is each student required to take a practical course (lectures are not meant) in operative surgery, and bandaging, and minor surgery?

Practical Obstetrics.—Is each student required to practice on the mannikin, or living subject, or both, in obstetrical diagnosis and treatment?

Practical Gynecology.—Is each student required to examine gynecological cases, and to prescribe or treat them, under direction of a teacher?

Physical Diagnosis.—Is each student required to practice this on the living subject, under the direction of a teacher, or is he simply told how to do it?

Post Mortem Examinations.—Is each student required to make one or more autopsies?

Practical Examinations.—In the final examination on Practice of Medicine, for example, is the candidate required to diagnosticate the disease of a living subject, in the presence of one or more teachers and the patient, discuss the case, and indicate treatment? Same as regards surgical examination. In the final anatomy examination is the student required to demonstrate any part of the body?

NOTES IN REGARD TO INDIVIDUAL COLLEGES.—(The numbers correspond to table numbers.)

2. Course graded, but not compulsory.

3. Regular session is in summer, with an intermediate, or winter, term of 16 weeks, *i. e.*, "76 weeks in our entire course." Course not entirely graded; some chairs are. Large out-door clinic in addition to hospital beds. Examinations clinical and practical in surgery and medicine. Hygiene and medical jurisprudence not taught as special chairs.

5. Lectures on Bacteriology—no work.

6. Practical surgery and physical diagnosis courses are optional. Women admitted to practical courses in biology and chemistry.

7. Three years' course for holders of Arts Degree, and rarely when a previous year has been spent with a registered practitioner. Bacteriology taught with pathology.

8. "As many of the examinations as possible are practical."

10. Examinations yearly. "Each student is required to make from three to twelve autopsies."

11. Each candidate for graduation must attend six cases of midwifery. Practical examinations held in hospital, by Queen's Univ., which is independent of the College.

13. "Clinical questioning daily." "Post mortem examinations performed as often as possible." "The matriculation before board means before the College of Physicians and Surgeons of the Province, or otherwise before Committee of School if no certificate of *Classical Course* is produced. Practical surgery is taught at the Hospital and Dispensaries, of which we have several in connection with the Hôtel Dieu. There is also gynecological work for advanced students at our hospital, and a dispensary has recently been founded for that also. The other branches, as pathology, bacteriology, etc., all included under the title of histology, with us, and we purpose next year giving special work in that direction. We have clinical bedside examinations in hospital for the final examination, besides written and oral."

18. Clinical work required: "enough to pass clinical examination." Course not graded, but "most students take three years and graded course."

19. Hospital work "not absolutely required, but is always carried out as far as possible." Graded course "not yet made compulsory." "Physical diagnosis required next year, but not heretofore."

20. Course will be graded "in near future." Chairs of "histology, laboratory pathology and bacteriology not yet filled."

21. The Dean writes: "I hope you will succeed in getting out a full statement of the statistics of our schools. I regret that an apparent injustice has to be done our course for the M.D. in stating that two 'winter courses' only are required. Our course is strictly graded on the same plan as is in vogue in the College and Sheffield Scientific School, so that it is the natural and expected thing that students expecting to study here should plan to spend three years here, and since the adoption of this course ten years ago, but few have done otherwise, although the old rule continues in force."

22. In regard to the obligatory and practical courses the Dean writes: "With a large majority of our students these replies might have been 'yes' instead of 'no.' But the question as to '*each* student being *required*,' etc., can be truthfully answered only in the negative." Upon this "yes" has been given as the answer.

25. Post-mortem examinations are required "as far as possible." Frequent course examinations, which are taken into account when candidate comes up for degree. The final examination in obstetrics is practical (on mannikin).

30. Hospital work in "ambulatory clinics." Final examinations "chiefly questions; also clinical and practical in practical branches."

33. No beds at command, "but the students are favored by one hospital and nine practicing physicians in the city."

35. Advises three years' course. "After session of 1890–91 we will require four years' study of medicine and the attendance of three courses of lectures—graded."

42. "Practical obstetrics on mannikin." Practical gynecology optional.

43. Practical obstetrics on mannikin. "Every member of the graduating class has every opportunity afforded him for examination and treatment of gynecological cases."

44. Course "partially but not completely" graded.

47. Some students take a three years' graded course.

54. "No student allowed to come up on any subject except having attended to full courses of lectures."

56. Bacteriology taught with pathology. Post-mortem examinations when (subjects) can be procured.

58. "Inasmuch as we propose to revise and reorganize our system and to inaugurate the three courses of lectures, we are not prepared to answer the questions with certainty, since several questions are not yet definitely determined by our Faculty. P. GERVAIS ROBINSON, M.D., Dean Mo. Med. Col."

59. "Actual clinical work will be soon made part of the course, and obligatory." Preparing for practical examinations at the coming winter session.

60. Students that desire can take graded course. "Heretofore the examinations have been written; but hereafter students will be examined at the bedside in clinical medicine and clinical surgery."

61. Graded course optional.

63. Two years' course not graded; three years' course graded.

64. Three years' graded course optional. *Facilities* for hospital and clinical work, but no requirements. "The Professor of Obstetrics furnishes the students with confinement cases, which the students attend at the patients' houses. Students required to attend and witness autopsies. "In the matter of gynecology advanced students are given opportunities to assist in the operations, and make all necessary examinations."

67. Students have obstetrical cases assigned them in hospital. Students examine gynecological cases brought before class.

68. Course graded "to a certain degree."

NOUNCEMENT FOR 1889–90—CONTINUED.

TION REQUIREMENTS.							OBLIGATORY PRACTICAL AND LABORATORY COURSES.														
Dissection Required.	Hospital Work Required.	Clinical Work Required.	Hygiene Taught?	Medical Jurisprudence?	Graded Course.	No. beds at command for Clinical Instruction.	Surgery.	Obstetrics.	Gynecology.	Chemistry.	Pharmacy.	Physiology.	Histology.	Pathology.	Bacteriology.	Physical Diagnosis.	Post mort. Exam't'n.	No. Instructors.	Women Admitted?	Practical Examinations.	Number.
Three parts	No	no	Yes	yes	no	350	yes	yes	yes	no	no	no	no	no	no	yes	no	15	yes	no	89
Six parts	Yes	Yes	Yes	yes	yes	1100	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	68	no	yes	90
Half subject	No	No	Yes	yes	no	150	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	40	no	no	91
Whole body	. . .	Yes	Yes	yes	yes	. . .	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	no	29	yes	no	92
Six parts	Yes	No	Yes	yes	yes	50	yes	yes	yes	yes	no	no	yes	yes	no	yes	no	38	?	yes	93
Body twice	Yes	Yes	Yes	yes	yes	200	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	no	41	no	yes	94
Six parts	No	No	Yes	yes	no	175	no	no	no	yes	yes	no	no	no	no	yes	no	13	. . .	no	95
. . . . .	No	No	Yes	yes	no	75	no	no	no	no	no	no	no	no	no	no	no	15	no	no	96
Two subjects . . .	Yes	Yes	Yes	yes	no	160	yes	yes	no	yes	no	yes	no	yes	no	yes	no	14	no	no	97
. . . . .	No	Yes	Yes	yes	yes	. .	no	no	no	yes	no	no	yes	no	no	yes	no	9	yes	no	98
. . . . .	No	. . . .	Yes	no	no	180	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	11	no	. .	99
. . . . .	Yes	Yes	Yes	yes	yes	150	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	10	yes	no	100
Whole body	. . . .	No	Yes	yes	no	20	yes	no	no	yes	no	yes	yes	no	no	yes	yes	17	no	yes	101
. . . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. . .	. . .	102
All parts	None	None	Yes	no	yes	none	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	19	no	no	103

69. Practical examinations during course, not as part of final examinations, and are taken into consideration at final examinations.

71. Three courses recommended. Course not graded, but final examinations are held in primary branches at end of second year for third year students.

72. Optional graded course.

74. Students required to examine patients, but not to prescribe for them, in dispensary. Each candidate for graduation must attend ten obstetrical cases.

75. Practical obstetrics on mannikin.

79. Practical surgery course in "bandaging." "Senior and middle classes required to attend all hospital clinics, and receive specific instruction in various dispensary departments." "No student allowed to graduate who has not attended a case of labor at the maternity." "Our senior class is divided up into classes of three or four; in this manner they obtain practical instruction in all the dispensary departments under instruction of professor or assistants. The service is changed every month. Each student has actual practice in the various departments." "Whilst it is true courses in practical surgery and gynecology are not *required* by us, yet our seniors do considerable minor surgery and gynecology when acting assistants in the dispensary."

81. Two years' course not graded; three years'course graded.

82. Three years graded course after next year. No clinical work compulsory; "all seniors have had at least one month each in surgery, medicine, gynecology and obstetrics."

84. Three years' course recommended.

85. "Final examinations theoretical, but candidates are examined on all clinical cases assigned them during their last term; when a student attends any case he is examined and marked from day to day."

86. Course not graded, "though most of our students attend three full courses." Practical examinations throughout course.

89. Practical examinations during term, not at final.

91. Laboratory courses are graded. Test examinations are conducted in laboratories, and taken into account. "This year 63 per cent. of our matriculates take a graded three years' course, and in 1890 all will be required to do so." "Students assist at post-mortem examinations—about ten each winter."

92. Spring course of ten weeks compulsory, making thirty-two weeks.

93. Admission of women under consideration.

95. Graded course not yet obligatory.

96. Graded course optional.

97. Graded course optional.

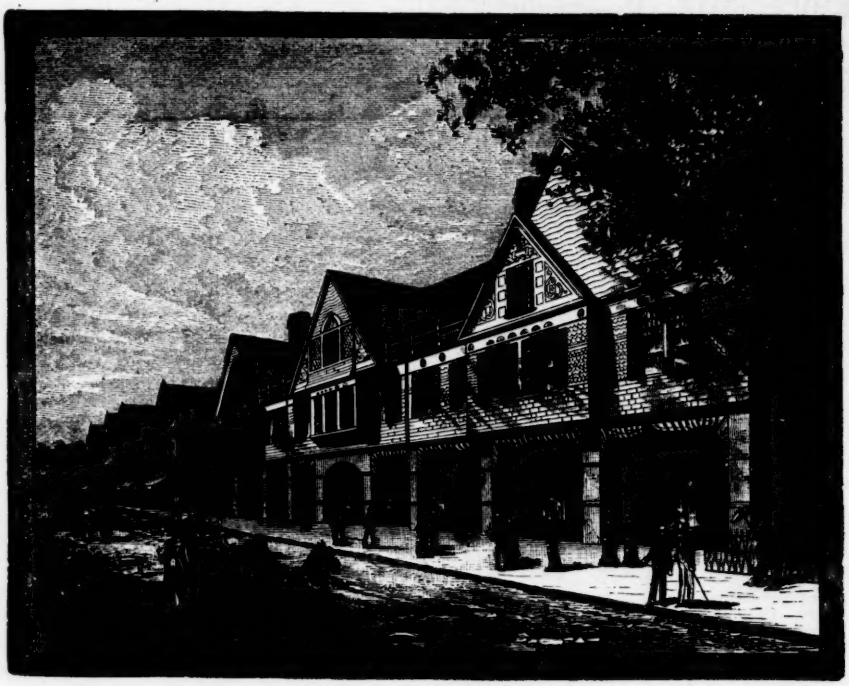
98. "If the new city hospital is completed students will have access to about thirty beds," and hospital work will be required. Practical obstetrics on mannikin. Practical electro-therapeutics required.

In the preparation of the foregoing tables very great difficulties have been encountered. Circulars with questions to be answered were sent to all the colleges on March 9. But few of these had been returned before it was evident that some of the questions had been misunderstood. An explanatory slip was then printed and sent out, the circulars being returned for correction. On March 29, a second set of circulars and explanatory slips was sent to the 51 colleges that had not been heard from. By April 15 there still remained 42 colleges to be heard from, and to these a third set of circulars and slips was sent. On April 26 there remained 26 colleges to be heard from, and still another set was sent to these. Meanwhile, of the replies that had been received many were unsatisfactory for various reasons, and circulars, slips, and letters were sent in order to have as complete and satisfactory information as possible. In this way more than 500 letters, circulars, etc., have been sent out to the 103 colleges.

The repeated requests for further information caused no little dissatisfaction among the deans and secretaries of the colleges. Yet a careful reading of the replies to the different questions, of college catalogues, and of the Fifth Report of the Illinois State Board of Health on "Medical Education" showed that some of the replies were inaccurate. For example, some of the colleges that claimed to have practical and clinical examinations" had no compulsory hospital or clinical work, and no practical courses—not even a compulsory physical diagnosis course! In several instances the same question was answered "Yes" on the circular and "No" on the explanatory slip. In a large number of cases a "Yes" was changed to "No" when the explanatory slip was sent. The time has been too short to make as thorough an investigation as was desired.

It will be seen that some of the colleges have not been heard from at all. It will be noticed also in the table, that there are blanks in the returns from some of the colleges. This shows that no attention has been paid to requests for further information, and as the first information was unsatisfactory it has not been given in the table.

It will be noticed that some of the two-course colleges claim to *require* hospital and clinical work, practical surgery, obstetrics and gynecology, physical diagnosis, post-mortem examinations, various laboratory courses, and practical examinations. How a student can do all these things in two courses of not more than 50 weeks all told is a mystery that remains to be solved.



THE CASINO.

Where the Sessions of the Association will be held.

American Medical Association.

LIST OF OFFICERS AND PROGRAMME OF THE FORTIETH ANNUAL MEETING.

TO BE HELD AT NEWPORT, R. I., JUNE 25, 26, 27 AND 28, 1889.

GENERAL OFFICERS:

President—W. W. DAWSON, M.D., Cincinnati, Ohio.
Vice-Presidents—W. L. SCHENK, M.D., of Kansas; FRANK WOODBURY, M.D., of Pennsylvania; H. O. WALKER, M.D., of Michigan; J. W. BAILEY, M.D., of Georgia.
Treasurer—RICHARD J. DUNGLISON, M.D., lock box 1274, Philadelphia, Pa.
Permanent Secretary—WM. B. ATKINSON, M.D., 1400 Pine Street, Philadelphia, Pa.
Local Secretary—VALENTINE MATT FRANCIS, M.D., New York.
Librarian—C. H. A. KLEINSCHMIDT, M.D., Washington, D. C.
Chairman Committee of Arrangements—H. R. STORER, M.D., Newport.

The General Sessions will be held at the Music Hall, Bellevue Avenue, adjoining the Ocean House, and those of the Sections at the Newport Casino, also immediately contiguous, which for the first time in its history, and as an act of courtesy, is permitted by its Governors to be occupied for other than the purpose for which it was built.

PROGRAMME OF GENERAL SESSIONS.

FIRST DAY, TUESDAY, JUNE 25.

Assemble in Music Hall, Bellevue Avenue, at 11 A.M.

Meeting called to order by Dr. Horatio R. Storer, Chairman Committee of Arrangements.

Prayer. Rev. Thatcher Thayer, D.D. (Cong.), the senior clergyman of Newport.

Reading names of delegates and others thus far registered, by permanent Secretary, Dr. Wm. Atkinson, of Philadelphia.

Announcement of the programme for the day, of halls for the Sections, that papers not already listed be handed to Chairman of Committee of Arrangements for reference to appropriate Sections, that Judicial Council meet at 2 P.M. at Newport Casino, and that, to prevent the usual haste and confusion, the delegates from the different States hold their separate meetings, to elect members of the Nominating Committee, at 9:30 A.M. Wednesday, at the Music Hall, half an hour before the general session.

Address of Welcome by Hon. Thomas Coggeshall, Mayor of Newport; by Dr. Henry E. Turner, of Newport, President of State Board of Health, on behalf of the profession of Newport; and Hon. James H. Eldredge, M.D., of East Greenwich, ex-President of Rhode Island Medical Society, on behalf of the profession of Rhode Island.

Presidential Address, Dr. W. W. Dawson, of Cincinnati, Professor of Surgery in the Medical College of Ohio.

SECOND DAY, WEDNESDAY, JUNE 26.

Meeting called to order by the President of the Association at 10 A.M.

Prayer.

Reading continuation of registry list, of programmes for the day, and call for reports of elections to Nominating Committee.

Address on Medicine, by Dr. Wm. Pepper, of Philadelphia, Provost of the University of Pennsylvania.

Report of the Trustees of THE JOURNAL.

Consideration of proposed Amendments to the Constitution.

Announcement of Nominating Committee, and that it will report at close of Thursday's general session.

THIRD DAY, THURSDAY, JUNE 27.

Meeting called to order by the President at 10 A.M.

Prayer.

Reading of continuation of registry list, and of programmes for the day, and notice that all new business must be introduced at to-day's session.

Address on Surgery, by Dr. Phineas S. Conner, of Cincinnati.

Introduction of New Business.

Report of Treasurer.

Report of Librarian.

Report of Rush Monument Committee.

Report of Nominating Committee.

FOURTH DAY, FRIDAY, JUNE 28.

Meeting called to order by the President at 9 A.M.

Prayer.

Reading of continuation of Registry list, and of programmes for the day.

Address on State Medicine, by Dr. W. H. Welch, of Baltimore.

Report of Necrologist.

Reading names of newly elected officers of the Sections and Delegates to Foreign Societies.

Introduction of the President-elect by the retiring President.

Response by the former.

Final Adjournment.

PROGRAMME OF SECTIONS.

Section on the Practice of Medicine, Materia Medica, and Physiology.

Chairman—F. C. Shattuck, M.D., Boston.
Secretary—G. A. Fackler, M.D., Cincinnati.

FIRST DAY—JUNE 25.

1. Address of the Chairman.

2. "On the Passage of Portal Blood into the General Circulation, and its Probable Relation to Toxæmia," by Charles G. Stockton, Buffalo, N. Y.

Discussion by William Osler, Baltimore; W. S. Tremaine, U. S. A.; John H. Musser, Philadelphia.

3. "Dioscorea Villosa—Wild Yam," by J. V. Shoemaker, Philadelphia.

4. "New Plan for the Treatment of Pneumonia," by G. R. Martine, Glen's Falls, N. Y.

5. "Some Clinical Aspects of Vomiting," by John H. Musser, Philadelphia.

6. "Differential Diagnosis of Varicella and Varioloid," by James T. Whittaker, Cincinnati.

7. "Some of the Rarer and Graver Forms of Cinchonism," by I. E. Atkinson, Baltimore.

SECOND DAY—JUNE 26.

1. "Chronic Endocarditis," by Francis Delafield, New York City.

Discussion by William Pepper, Philadelphia; W. W. Gannett, Boston.

2. "On the Nature and Treatment of Chlorosis," by William Osler, Baltimore.

3. "Hydronephrosis, especially as Caused by Functional Disorders of Micturition," by Robert T. Edes, Washington, D. C.

4. "The Induction of Premature Labor in Bright's Disease," by James Tyson, Philadelphia.

5. "The Treatment of Epilepsy," by Charles F. Folsom, Boston.

6. "Alkaloidal Medication per Rectum, A New Method of Medication," by Elmer Lee, St. Louis.

7. "Reynaud's Disease," George M. Garland, Boston.

THIRD DAY—JUNE 27.

1. "The Etiology and Pathology of Typhoid Fever," by Victor C. Vaughan, Ann Arbor, Mich.

Discussion by Henry P. Walcott, Cambridge; William Osler, Baltimore.

2. "The Physiological Action of the Typhoid Fever Poison." by N. S. Davis, Jr., Chicago.

3. "Toxic Agents in the Blood as a Cause of Diseases of the Nervous System," by M. R. Crain, Rutland, Vt.

4. "Some Thoughts on the Etiology, Pathology, and Therapeutics of Phthisis Pulmonalis," by W. L. Schenck, Kansas City.

5. "Food in the Treatment of Consumption," by Solomon Solis Cohen, Philadelphia.

6. "Trophopathy in Fatty and Fibroid Degenerations, with Presentation of Cases of Cure."

7. "The Climate of Salt Lake," by Dr. Bascom, Salt Lake City.

FOURTH DAY—JUNE 28.

1. "The Prophylaxis of Tuberculosis," by James C. Wilson, Philadelphia.

2. "Signs in Disease," by H. M. Brown, Hillsboro', Ohio.

3. "Ulcerative Endocarditis," by J. G. Truax, New York City.

4. "Myalgia," by Gustavus Eliot, New Haven, Conn.

5. "Veratrum Viride in the Treatment of Disease," by Thomas Legaré, Charleston, S. C.

6. "Stomach Rest and Cleanliness," by Mary E. Baldwin, Newport.

7. "Heat as a factor in Disease," by John H. Hollister, Chicago.

Section of Obstetrics and Diseases of Women.

Chairman—W. H. Wathen, M.D., Louisville.
Secretary—A. B. Carpenter, M.D., Cleveland.

1. "Note on the Use of Boric Acid in Gynesic Practice," by W. W. Potter, M.D., Buffalo, N. Y.

2. "Bimanual Palpation as a Means of Diagnosis in Diseases of the Female Pelvic Organs," by Paul F. Mundè, New York City.

3. "Series of Five Hundred Confinements in a Maternity," by Joseph Price, Philadelphia, Pa.

4. "Observations on Abdominal Section, based on Two Hundred and Fifty Cases," by James B. Hunter, New York City.

5. "A New Procedure of Colpoperineoplasty by Glissement," by A. Doleris, Paris, France.

6. "Stricture of the Urethra in Women," by Ely Van de Warker, Syracuse, N. Y.

7. "The Inversion of the Uterus; Reduction by a New Method; Exhibition of Instruments," by Henry O. Marcy, Boston, Mass.

8. "Observations on Abominal Surgery, with Report of One Hundred Consecutive Cases Done in the Past Year," by W. Gill Wylie, New York City.

9. "Concealed Pregnancy, Its Relation to Abdominal Surgery," by A. Vander Veer, Albany, N. Y.

10. "The Routine Management of Cases of Acute Intestinal Obstruction," by J. Greig Smith, Bristol, England.

11. "The Medals of Benjamin Rush, Obstretrician," by Horatio R. Storer, Newport, R. I.

12. "The Field and Limitations of Supra-Vaginal Hysterectomy, and Methods of Operating," by L. S. McMurtry, Danville, Ky.

13. "Casuistry in Obstetrics," by Theophilus Parvin, Philadelphia, Pa.

14. "Fœtal Pathology," by W. H. Taylor, Cincinnati, Ohio.

15. "Tetanus following Ovariotomy," by Joseph Tabor Johnson, Washington, D. C.

16. Prof. J. Veit, Berlin, Germany. (Subject not given.)

17. "The Obstetrician as a Counselor," by Thomas Opie, Baltimore, Md.

18. "Injuries to the Bladder during Laparotomy," by A. Reeves Jackson, Chicago, Ill.

19. "Craniotomy and its Indications," by Joseph Hoffman, Philadelphia, Pa.

20. "Glandular Endometritis, Illustrated with Microscopic Projection," by Samuel N. Nelson, Boston, Mass.

21. "Electrical Treatment of Salpingitis, with Observations," A. Apostoli, Paris, France.

22. "Pelvic Abscess in the Female," by Wm. H. Parrish, Philadelphia, Pa.

23. "The Recognition and Treatment of Lacerations of the Cervix by the Obstetrician," by Henry C. Coe, New York City.

24. DeLaskie Miller, Chicago, Ill. (Subject not given.)

25. Prof. Gusserow, Berlin, Germany. (Subject not given.)

26. "Reasons for Drainage in Ovariotomy," by Hampton E. Hill, Saco, Me.

27. "When and What Kind of Obstetrical Forceps Should be Used," by Wm. S. Stewart, Philadelphia, Pa.

28. "Chronic Cystitis in the Female," by Augustus P. Clarke, ——, Mass.

29. "Results of Removal of Uterine Appendages After One or More Years," by S. C. Gordon, Portland, Me.

30. "The Indications for, and Limits of, the Operation for the Removal of the Uterine Appendages," by E. E. Montgomery, Philadelphia, Pa.

31. "Observations in Connection with S. Weir Mitchell's Mode of Producing Fat and Blood," by W. H. Bond, St. Louis, Mo.

32. "Peritoneal Effusions," by Wm. H. Meyers, Ft. Wayne, Ind.

33. "The Rectification of Malpositions of the Head by Rotation with the Forceps," by Edward J. Ill, Newark, N. J.

34. "Pregnancy in the Retroversed Uterus, with Cases," by James R. Chadwick, Boston, Mass.

35. "The Therapeutic Value of Electricity in Gynecology," by L. S. Fox, Lowell, Mass.

36. "Alexander's Operation, with a New Method of Securing the Round Ligaments," by A. B. Carpenter, Cleveland, Ohio.

37. "The Use of Glycoboron in Gynecology," by Wm. Thornton Parker, Providence, R. I.

38. Bache McE. Emmet, New York City. (Subject not given,)

39. "Emmet's Buttonhole Operation," by Virgil O. Hardow, Atlanta, Ga.

40. "On the Treatment of Cancer of the Uterus," by Thomas Moore Madden, Dublin, Ireland.

41. W. E. B. Davis, Birmingham, Ala. (Subject not given.)

42. "A New Two-Ways Catheter for Uterine Irrigation," by A. Cordes, Geneva, Switzerland.

43. "The Application of Forceps to Transverse and Oblique Positions of the Head; Description of a New Forceps," by Henry D. Fry, Washington, D. C.

44. "The Galvanic Current in Gynecology," by A. Lapthorn Smith, Montreal, Canada.

45. "Tubal Pregnancy; Delivery at Six Months per Vias Naturales; Recovery," by Wm. M. Fineley, Altoona, Pa.

46. Thomas E. McArdle, Washington, D. C. (Subject not given.)

47. George R. Shepherd, Hartford, Conn. (Subject not given.)

48. W. B. Carson, St. Louis, Mo. (Subject not given.)

Section on Surgery and Anatomy.

Chairman—N. P. Dandridge, M.D., Cincinnati.

Secretary—W. O. Roberts, M.D., Louisville.

TUESDAY, JUNE 25—FIRST DAY.

1. "On the Surgery of the Lateral Ventricles of the Brain," by W. W. Keen, Philadelphia.

Discussion, J. Collins Warren, Boston.

2. "Concussion of the Spine in its Medico-Legal Aspect," by H. H. Smith, Philadelphia.

Discussion by Herbert Judd, Galesburg; B. A. Watson, Jersey City; Edmund Andrews, Chicago.

3. "Surgery of Peripheral Nerves," by Maurice Richardson, Boston.

4. "Pathology and Treatment of Chronic Sciatica," by J. G. Carpenter, Stanford, Ky.

5. "Suspension and Extension in the Treatment of Chronic Sciatica," by C. C. Hunt, Dixon, Ill.

6. "Arthrectomy of Knee Joint," by E. H. Bradford, Boston.

WEDNESDAY—SECOND DAY.

1. "The Treatment of Stone in the Urinary Bladder," by W. T. Briggs, Nashville.

2. "Litholapaxy," by A. T. Cabot, Boston.

3. "Litholapaxy in Children," by Dudley Allen, Cleveland.

Discussion—"Choice of Operation for Stone," J. W. S. Gowley, New York; C. T. Gardner, Providence.

4. "Management and Treatment of Large Hernia," by J. Collins Warren, Boston.

5. "Open Wound Treatment of Hernia," by H. O. Marcy, Boston.

6. "Properitoneal Hernia," by Thomas W. Dulles, Philadelphia.

7. "Epicystic Surgical Fistula for Relief of Vesical Catarrh," by J. D. S. Davis, Birmingham, Ala.

THURSDAY—THIRD DAY.

1. "Some Further Considerations and Statistics of Abdominal Sections for Traumatism," by Thos. S. K. Morton, Philadelphia.

2. "Pelvic Surgery by Abdominal Section, its Past, Present and Future," by Jos. W. Price, Philadelphia.

3. "Peritonitis," by J. M. Baldy, Philadelphia.

4. "Drainage in Abdominal Surgery," by Charles B. Penrose, Philadelphia.

5. "A Plea for Early Abdominal Work," by M. Price, Philadelphia.

6. Title not received, by L. S. McMurtry.

7. "Chylous Cyst of Mesentery, with Report of a Case," by N. B. Carson, St. Louis.

8. "The Use, 25 Years Ago, of Polarity, Locating the whereabouts of a Leaden Bullet in the Body of a Brave Soldier," by Addinell Hewson, Philadelphia.

9. Fistula in Ano," by J. M. Matthews, Louisville.

10. "Wiring the Patella in Old Ununited Fracture," by W. C. Will, Danbury.

11. "The Healing of Aseptic Bone Cavities by Inplantation of Antiseptic Decalcified Bone," by N. Senn, Milwaukee.

12. "Electrolysis in the Treatment of Stricture of the Rectum," by Robert Newman, New York.

13. "A New Rib Cutter, and a Case of Resection of Ribs for Drainage of a Pulmonary Cavity," by Charles Denison, Denver.

14. "The Absorption of Dead Bone," J. B. Hopkins, Philadelphia.

Section on State Medicine.

Chairman—J. Berrien Lindsley, M.D., Nashville, Tenn.

Secretary—S. T. Armstrong, M.D., U. S. Marine Hospital Service, New York, N. Y.

TUESDAY—JUNE 25, 2 P.M.

Section called to order. Announcement of titles of volunteer papers to be read Friday, June 28.

"The American Medical Association and its Relations to the Public Health," by N. S. Davis, Chicago, Ill.

"International Comity in State Medicine," by John B. Hamilton, Washington, D. C.

"Volunteer Sanitary Organizations as an Aid to Public Boards of Health," by H. R. Storer, Newport, R. I.

"The Importance and Essential Needs of Local Boards of Health," by W. C. Rives, New York, N. Y.

"Modern Sanitary Conditions," by Geo. E. Waring, Jr., Esq., Newport, R. I.

"Rural Sanitation," by Thos. M. Flandrau, Rome, N. Y.

"Report of the Committee on Uniform Medical Legislation in the United States," by Perry H. Millard, Chairman.

"Medical Legislation in the United States," by Perry H. Millard, St. Paul, Minn.

WEDNESDAY—JUNE 26.

Called to order; reading of minutes of preceding meeting.

Annual Address of the Chairman, by J. Berrien Lindsley, Nashville, Tenn.

1. "Quarantine of the Future," by W. C. Van Bibber, Baltimore, Md.

Discussion opened by J. H. VanDeeman, Nashville, Tenn.

2. "Etiological Relations of Water to Disease," by F. L. Sim, Memphis, Tenn.

3. "The Purification of Drinking Water for Cities," by Charles V. Chopin, Providence, R. I.

4. "Bacteriological Examination of Several Native Mineral Waters in the Bottled State," by George Minges, Dubuque, Ia.

5. "Report of the Standing Committee on Meteorological Conditions," by N. S. Davis, Chairman.

6. "The Climatic Causation of Consumption," by Henry B. Baker, Lansing, Mich.

7. "Climatological Characteristics of Salt Lake City," by F. S. Bascom, Utah.

8. Ranch Life in Texas for Consumptives," by J. R. Briggs, Dallas, Tex.

9. "Biometry, or the Measure of Life as Applied to Life Assurance," by Charles Everett Warren, Boston, Mass.

THURSDAY—JUNE 27.

Called to order; reading of minutes of preceding meeting.

Election of officers for the Section for the ensuing year.

1. "The Necessity for Sanitary Supervision of Schools," by George H. Rohé, Baltimore, Md.

Discussion opened by W. L. Schenck, Osage City, Kas.

2. "Notes on the Progress of Leprosy," by Benjamin Lee, Philadelphia, Pa.

3. "Personal Disinfection in Scarlatina," by L. D. Waterman, Indianapolis, Ind.

4. "Report of the Committee on Fœticide," by I. M. Quimby, Chairman.

5. "The Causation and Restriction of Infantile Mortality," by V. C. Vaughan, Ann Arbor, Mich.

6. "Is it Detrimental to the Health of Passengers on Shipboard to Convey to Port the Bodies of Persons who Die at Sea of Non-contagious Disease?" by I. N. Quimby, Jersey City, N. J.

7. Disposal of House Refuse," by Alfred L. Carroll, New York, N. Y.

8. "The Benefits of Sanitation Applied to Obstetrical and Gynecological Surgery," by T. A. Ashby, Baltimore, Md.

9. "Stamina," by A. N. Bell, Brooklyn, N. Y.

FRIDAY—JUNE 28.

Called to order; reading of minutes of preceding meeting.

Reading of volunteer papers.

Section on Ophthalmology.

Chairman—George E. Frothingham, Ann Arbor, Mich.

Secretary—G. C. Savage, Nashville, Tenn.

FIRST DAY—JUNE 25.

1. Address by the Chairman, Geo. E. Frothingham, Ann Arbor, Mich., "The Need of Discussing Ophthalmic Subjects."

2. "The Prevention of Pain and the Improvement of the Stump following Evisceration of the Eye," by A. E. Prince, Jacksonville, Ill.

3. "What can we do to Induce the Government to Make the Census of 1890 Contribute Efficiently to a Clear Conception of the Causes of Blindness in the United States," by Robert Tilley, Chicago.

4. "Advances in Our Knowledge of some Cerebral Ocular and Intra-Ocular Lesions which Facilitate the Diagnosis and Treatment of Important Diseases," by H. W. Williams, Boston.

5. "Ocular Symptoms of Diseases and Injuries of the Spinal Cord," by J. F. Fulton, St. Paul, Minn.

6. "Impaired Vision as a Result of Sunstroke," by A. R. Baker, Cleveland, O.

7. "Some Cases of Inflammation and Atrophy of the Optic Nerve, with Special Reference to Etiology and Prognosis," by J. L. Thompson, Indianapolis, Ind.

8. "The Non-Surgical Treatment of Strabismus Convergens," by E. J. Gardiner, Chicago.

9. "Tobacco Amaurosis," by Leartus Connor, Detroit.

10. "Paralysis of Accommodation from Concussion of Eyeball; Treatment," by Eugene Smith, Detroit, Mich.

SECOND DAY—JUNE 26.

1. "A Case of Sympathetic Irido-Choroiditis, Induced by Sarcoma of the Choroid, and Appearing Five Days After the Enucleation of the Sarcomatous Eye," Interesting Clinical History and Final Recovery," by F. C. Hotz, Chicago.

2, "Tumors of the Optic Nerve," by S. C. Ayres, Cincinnati.

3. "The Needless and Annoying Restraints after Eye Operations," by J. J. Chisolm, Baltimore.

4. "The Advantage of a Preliminary Iridectomy in Cataract Extraction," by LeRoy Dibble, Kansas City.

5. "Keratitis Trachomatosis," by J. H. Thompson, Kansas City.

6. "Gradation of Lenses," by Dudley S. Reynolds, Louisville.

7. "Glaucoma Fulminans, after Operations," by P. D. Keyser, Philadelphia.

THIRD DAY—JUNE 27.

1. "Traumatism of the Eye," by C. M. Hobby, Iowa City.

2. "Ametropia in Schools," by F. B. Tiffany, Kansas City.

3. The Ametropiæ and Their Relation to Insufficiencies of the Recti Muscles," by J. W. Wright, Columbus, O.

4. "Embolus of the Inferior Branch of the Retinal Artery Visible with the Ophthalmoscope, Disappearance of Embolus and Recovery of the Greater Part of Visual Field under Massage and Nitrite of Amyl," by H. Gifford, Omaha, Neb.

5. "Intra-Ocular Diseases Caused by Chronic Rhinitis," by J. G. Sinclair, Nashville, Tenn.

Other papers have been promised, but as yet the subjects have not been announced. All who expect to read papers are requested to send the title at once, either to the Chairman or Secretary of the Section, otherwise they can not be placed upon the programme of proceedings, which will be published soon by the Committee of Arrangements.

Section on Diseases of Children.

Chairman—J. A. Larrabee, M.D., Louisville.
Secretary—C. J. Jennings, M.D., Detroit.

FIRST DAY, JUNE 25.

1. "The Management of Infants during the First Year," by T. B. Greenley, West Point, Ky.

2. "Cow's Milk for Infant Food," by E. F. Brush, Mt. Vernon, N. Y.

3. "Summer Diarrhœa and Dysentery" by N. Guhmann, St. Louis, Mo.

4. "Intestinal Diseases of Children during Hot Weather," by Peter Hooper, Philadelphia, Pa.

5. "Cholera Infantum, its Etiology and Treatment," by Steele Bailey, Stanford, Ky.

SECOND DAY, JUNE 26.

1. "Heart Failure in Diphtheria," by Geo. Wheeler Jones, Danville, O.

2. "Intubation of the Larynx, with Reports of Cases," by F. E. Waxham, Chicago, Ill.

3. "Scarlatina" by C. R. Earley, Ridgeway, Pa.

4. "Pathology and Treatment of Certain Complications of Scarlet Fever," by Talbot Jones, St. Paul, Minn.

5. "The Value of Hydrogen Dioxide in the Treatment of Diseases of Children," by Marcus P. Hatfield, Chicago, Ill.

6. "A Rule with Penalty in Public Schools," by David I. Booth, Sparta, Ill.

7. "Poliomyelitis Anterior Acuta," by S. P. Deahofe, Potsdam, O.

THIRD DAY, JUNE 27.

1. "Serious Abdominal Injuries of Children," Resulting from Traumatisms Seemingly Trivial," by I. N. Love, St. Louis, Mo.

2. "Visceral Neuralgias in Children," by J. C. Wilson, Philadelphia, Pa.

3. "Atropine in Eneuresis," by Wm. Perry Watson, Jersey City, N. J.

4. "Adherent Præputium Clitoridis as a Cause of Chorea, with Report of a Case," by C. Henri Leonard, Detroit, Mich.

5. "A Further Study of the Cardiac Relations of Chorea," by Wm. Osler, Philadelphia, Pa.

6. "The Treatment of Heart Disease in Children," by J. A. Robison, Chicago, Ill.

FOURTH DAY, JUNE 28.

1. "The Physical Education of Children," by A. H. P. Leuf, Philadelphia, Pa.
2. "The Treatment of Tubercular Bone Lesions before the Joint is Invaded," by V. P. Gibney, New York.
3. "Notes on Surgical Diseases of Children," by Edwin Brock, St. Louis, Mo.
4. "Spine Bifida," by Norman Teal, Kendallville, Ky.
5. "Trismus Nascentiam," by A. V. Williams, Frankfort, Ky.

Papers have been promised from Jerome Walker, Brooklyn, N. Y., W. B. Atkinson, Philadelphia, Pa.

Section of Dental and Oral Surgery.

Chairman—F. H. Rehwinkle, Chillicothe, O.
Secretary—E. S. Talbot, Chicago.

TUESDAY, JUNE 25.

Address by T. H. Rehwinkle, Chairman.

1. "Facial Neuralgia Associated with Pregnancy," by W. W. Allport.

WEDNESDAY, JUNE, 26.

1. "Diseases of the Antrum," by Wm. Carr.
2. "Fissures," by R. R. Andrews.

THURSDAY, JUNE, 27.

1. "Care of the Teeth of Pregnant Women," by John Marshall.
2. "Statistics of Irregularities of the Teeth of Normal Individuals, the Idiotic, Deaf and Dumb, Blind and Insane," by Eugene S. Talbot.

Numerous other papers have been promised.

Section of Medical Jurisprudence.

Chairman—J. G. Kiernan, M.D., Chicago.
Secretary—S. C. Evans, M.D., Baltimore.

FIRST DAY, JUNE 25.

1. "History of Medical Jurisprudence," by Judge Amos G. Hull, New York.

SECOND DAY, JUNE 26.

1. "Tests of Insanity," by H. N. Moyer, Chicago.
2. "Monomania," by Clark Bell, New York.
3. "Legal Decisions on Insanity"—Chairman's Address, by Jas. G. Kiernan, Chicago.
4. "Massachusetts Insanity Laws," by T. W. Fisher, Boston.
5. "Illinois Insanity Laws," by Harriet C. B. Alexander, Chicago.

THIRD DAY, JUNE 27.

1. "Legal Aspects of Inebriety," by T. L. Wright, Bellefontaine, Ohio.
2. "Inebriate Criminals," by T. D. Crothers, Hartford, Conn.
3. "Social Aspects of Alcoholism," by E. C. Spitzka, New York.

FOURTH DAY, JUNE 28.

1. "Spinal Concussion," by S. V. Clevenger, Chicago.

Section on Dermatology and Syphilography.

Chairman—L. Duncan Bulkley, New York.
Secretary—W. T. Corlett, Cincinnati, O.

FIRST DAY, JUNE 25.

1. Address by the Chairman, "Recent Advances in the Treatment of Diseases of the Skin."
2. Discussion on "The Treatment of Tinea Tonsurans," opened by W. T. Corlett, and Henry Fleischner."
3. "The Prophylaxis of Ringworm of the Scalp," by Fred. J. Leviseur, New York.
4. "Some notes on Hoang-nan," by J. V. Shoemaker, Philadelphia.
5. Analysis of 250 Cases of eczem-seborrhoicum," by George T. Elliot, New York.
6. "Prurigo hiemalis, or Winter Itch," by W. T. Corlett, Cleveland, Ohio.
7. "Dermatitis Exfoliativa," by E. N. Brush, Philadelphia.

SECOND DAY, JUNE 26.

1. "Discussion on "The Indications for and Duration of the Treatment of Syphilis, opened by L. Duncan Bulkley, or another.
2. "The Positive Diagnosis of Syphilis," by Ephraim Cutter, of New York.
3. "On Pruritus," by Henry Fleischner, New Haven, Conn.
4. "A Case of Painful Subcutaneous Neuroma (Neuro-fibroma)," by J. Abbott Cantrell, Philadelphia.
5. "Relations between Acne and Diseases of the Nasal Cavity," by Carl Seiler, Philadelphia.
6. "Answers to questions Deposited in Question Box Relating to Dermatology or Syphilography.

THIRD DAY, JUNE 27.

1. "A Case of Kraurosis Vulvæ," by A. H. Ohman-Dumesnil, of St. Louis, Mo.
2. "Use and Abuse of Soap and Water," by Merrill Ricketts, Cincinnati, O.
3. "The Treatment of Felon without Incision," by J. S. Miller, York, Penn.
4. "The Early Recognition and Treatment of Epithelioma," by L. Duncan, Bulkley, New York.

Section on Laryngology and Otology.

Chairman—W. H. Daly, M.D., Pittsburg.
Secretary—E. F. Ingals, M.D., Chicago.

1. "The Third Tonsil; Its Important Relation to Naso-Pharyngeal and Naso-Aural Catarrh," by Joseph A. White.

2. "Adenoid Hypertrophy of Vault of Pharynx—Pathology and Treatment," by Bryson Delevan.

3. "The Benefits to be Derived from the Radical Operation for the Relief of Nasal Stenosis," by Holbrook Curtis.

4. "Obstruction of the Nares Causing Nervousness," by Hal Foster.

5. "Empyema of the Frontal Sinus," by Geo. A. Richards.

6. "Clinical Notes," by J. D. Arnold.

7. Short Address, by Lennox Brown.

8. "An Analysis of One Hundred Cases of Cough Cured by Adoption of Operative Procedure in the Treatment of Existing Morbid State of Nasal Cavities," by J. E. Schadle.

9. "Clinical Observations in a Number of Cases," by Carl Seiler.

10. "A New Gag, and Some Conservative Observations about Intubation," by Chas. Denison.

11. "Internal Ear Deafness, Illustated with Cases," by J. G. Carpenter.

12. "On the Value of Antiseptic Treatment of and Protection of Membrana Tympani in Perforation," by Laurence Turnbull.

13. "Report of Cases of Dangerous Middle-Ear and Mastoid Inflammations, which followed Treatment of Naso-Pharynx," by J. L. Thompson.

14. "Observations upon the Effect of Nasal Obstruction on the Middle-Ear," by F. Whitehall Hinkel.

15. "The Indications for the Excision of the Drumhead of the Ear," by Samuel Sexton.

16. "The Possible Danger to Middle-Ear as a Result of Nasal Atomization," by C. W. Richardson.

17. "Nasal Polypi in Children, and Double Uvula," by John McKenzie.

18. "The Relation of Tonsilitis to Rheumatism," by S. J. Radcliff.

19. "Morbid Perforations of Nasal Septum," by A. B. Thrasher.

20. "Perforating Ulcer of the Septum Narium," by Max Thorner.

21. "Chronic Obstipation of the Nares; Hernia," by W. Frendenthal.

22. "Affections of the Throat as Evidence of Diseases in other Localities," by Jas. E. Logan.

23. "Epilepsy Caused by Intra-Nasal Disease," by F. S. Crossfield.

24. "Effects of Natural Gas upon Upper Air Passages," by D. W. Rankin.

25. "The Influence of Disorders of Digestion on Catarrh of Air Passages," by A. M. Duncan.

26. "The Treatment of Acute Naso-Pharyngeal Catarrh," by S. S. Bishop.

27. "Congenital Occlusion of Naso-Pharynx, with Report of Two Cases," by F. O. Stockton.

28. "On the Use of Menthol in Upper Air-Passages," by Frank H. Potter.

29. "Menthol in Laryngeal Phthisis," by C. H. Knight.

30. "Sclerosis of Mastoid Cells," by J. B. Lippincott.

31. "Malignant Tumors of Larynx," by H. A. Johnson.

32. "Laryngeal Gummata," by Robert Levy.

33. Glandular Hypertrophies at the Base of Tongue," by John O. Roe.

34. "A Case of Acute Rheumatic Laryngitis of Gonorrhœal Origin," by Wm. K. Simpson.

35. "Abscess of the Antrum of Highmore; Its Diagnosis and Treatment," by J. H. Bryan.

36. Nasal Bacteria," by Jonathan Wright.

37. "Treatment of Cystic Goitre," by E. Fletcher Ingals.

Papers are also expected from the following, but the titles have not been received:

Drs. E. L. Shurly, Louis Jurist, Wm. Porter, J. Mount Bleyer, Chas. E. Sajous, Thos. Legaré, Chas. Stover Allen, J. Solis-Cohen, C. E. Bean, F. I. Knight, W. E. Casselberry, E. R. Lewis.

Others desirous of reading papers in any of the Sections should at once send the title of their paper to Dr. H. R. Storer, Newport R. I., and to the Chairman of the Section in which they wish to read it.

HOTELS.

In Newport.—Ocean House, Bellevue Ave., $4 per day, (special rate); The Aquidneck, Pelham St., $3 per day, (special rate); Brayton House, Pelham St.; Cliff Ave. Hotel, on the Cliffs, $2.50–$3; Perry House, Washington Square; Central House, 14 Bath Road.

In Jamestown—(Eighteen minutes by steam ferry from Newport. Boat making trips about every hour, each way.) Bay View House, C. T. Knowles, $2 per day; Gardner House, Gardner & Littlefield, about $2 per day; Prospect House, C. E. Weeden, $2 per day; Champlins', Wm. A. Champlin, $1.50 per day.

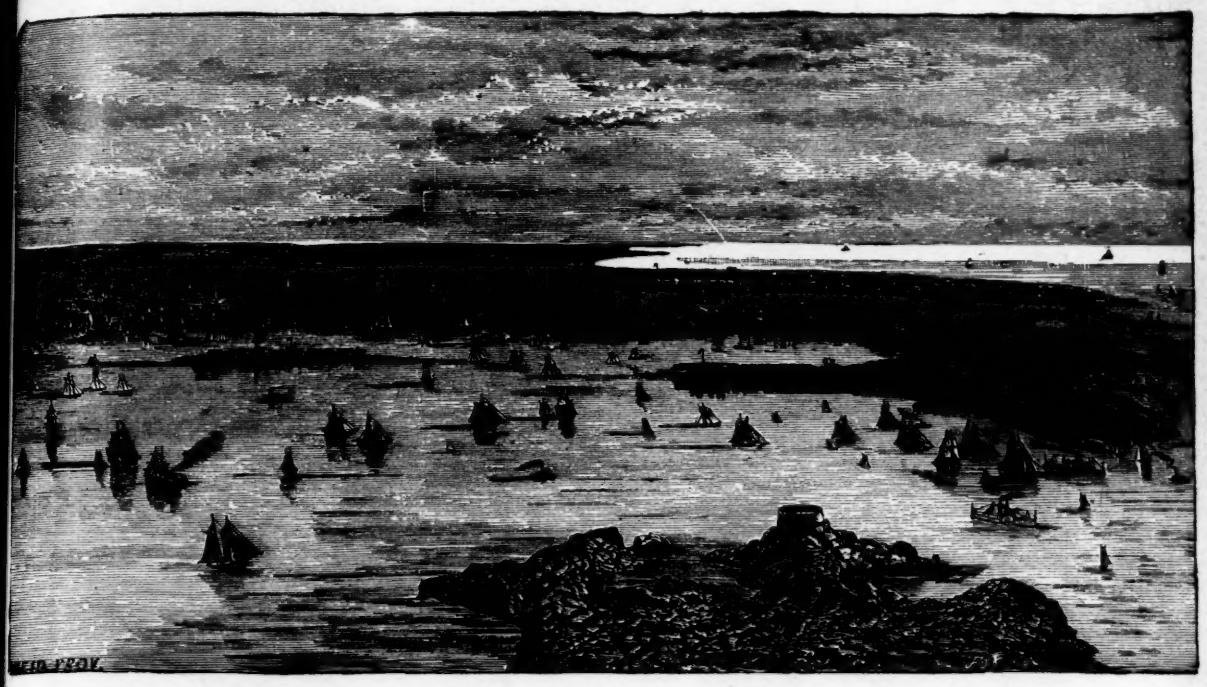
A list of Boarding Houses and Railroad rates will be published in the next issue of THE JOURNAL.

COMMENCEMENT WEEK AT YALE.—Prof. H. C. Wood, M.D., of Philadelphia, will deliver the annual address in Medicine at Yale University on Tuesday, June 25, at 12 M., and in the evening of the same day a reception will be tendered to Dr. Wood at the residence of Dr. C. A. Lindsley, 15 Elm St., New Haven, to which the profession is invited.

REMEDY AGAINST SEA-SICKNESS.—Dr. Franz Heller, of Vienna, claims he has discovered a sure remedy for this troublesome *compagnon de voyage*. It consists simply in keeping the body level by following the motions of the vessel, bending the right knee as the vessel rises to that side, and then the left as the motions are reversed.

PROFESSOR VIRCHOW is said to be re-writing an edition of his great work on "Cellular Pathology."

NEWPORT VIEWS.
The Old Mill. The City Walk. Washington Square.



BIRD'S-EYE VIEW OF NEWPORT.

NEWPORT-BY-THE-SEA.

This picturesque and fashionable summer resort,[1] at which the Fortieth Annual Meeting of the American Medical Association will be held, is seated on the southern extremity of Rhode Island at the main entrance to Narragansett Bay. The territory of Newport comprises the southern portion of the island of Rhode Island, joining an elbow-shaped peninsular, of an average width of about two miles, the harbor being on the inside.

All that section near the wharves and for some distance back is the old and historic Newport, and is the business portion of the city. Here are still to be seen many old houses with gambrel roofs or projecting eaves, built previous to the Revolution, and most of them have interesting histories of the old colonial days, famous families, or revolutionary events. The appearance of antiquity is further heightened in this quarter by the narrowness of the side streets, lined in places with the ancient houses.

Lying to the east and south of the older portion, on the ridge of the peninsular, on all the intersecting avenues and all along the bold and picturesque coast, are palatial mansions known by the unpretentious name of "cottages," but in reality many of them are palaces, rich in treasures of wealth and taste, and fitted up with every conceivable luxury. They are embowered in trees, surrounded with pleasant lawns, some perched on the edge of the cliffs overlooking the sea, and nearly all within sight and hearing of the ever restless ocean.

Newport was first settled in 1639, and during the old colonial days surpassed New York as a commercial port. During the Revolutionary war its commerce was destroyed, and though slowly recovering from the devastating effects has never regained its commercial position.

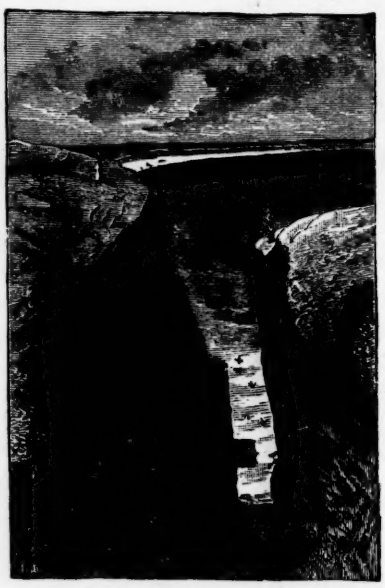
The chief of Newport summer institutions is the Casino, in which the daily sessions of the Association will be held. The building has a frontage of 186 feet, and is in imitation of the old colonial style of architecture, the first floor being occupied by stores and the upper part by the stockholders. In the grounds to the rear are a theatre, a tennis court and an extensive bowling alley. The Casino was erected by James Gordon Bennett, but is now owned by a joint stock company. Near the Casino are the handsome residences of James Gordon Bennett and Mrs. Paran Stevens.

The principal promenade and drive for fashionable society in the season is Bellevue avenue. The grand drive is around the Ocean House, sometimes called the ten-mile drive. The first part of the drive is up Touro street and along Bellevue avenue. Starting from Bailey's Beach the road follows the indentations of the shore, affording magnificent views of the rocky coast.

[1] We are indebted to J. Truman Burdick & Co., of Newport, R. I., for a copy of "Picturesque Newport," from which we have compiled this sketch.

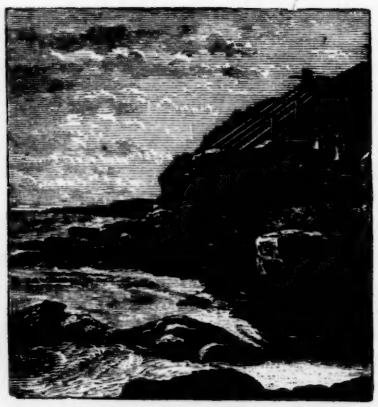
On the return very fine views of the city and harbor are obtained.

Two miles across the city is Easton's Beach, one of the chief attractions of Newport. On the west side of Easton's Beach the shore is faced with cliffs of broken jagged rocks. For about three miles a graded pathway leads along the edge affording magnificent views. At the foot



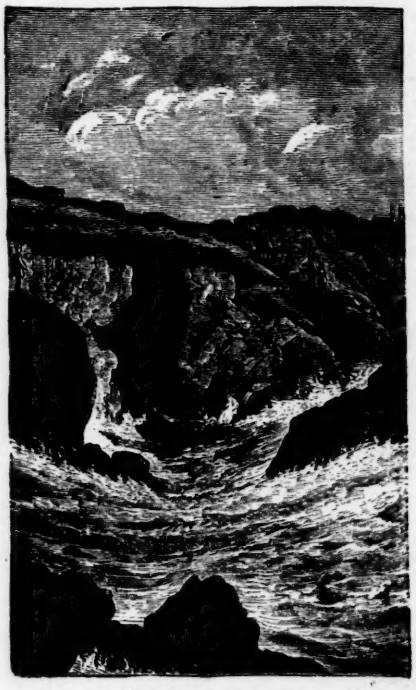
PURGATORY.

of Narragansett avenue are the Forty Steps. Beyond Easton's Beach, and separated from it by the peninsular of Easton's Point is Sachuest Beach, which is much larger than Easton's, but not so safe. On the east side of the peninsular,



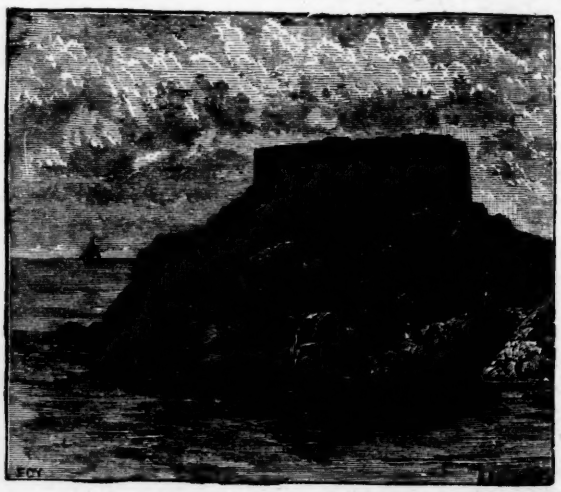
THE FORTY STEPS.

and pointing on Sachuest Beach, is a deep yawning crevice in the face of the cliff, 160 feet long, 8 to 14 feet wide and 50 feet in depth. It is known as Purgatory, and there are various legends connected with it. At the southern extremity of the eastern ridge are the Hanging Rocks and the Happy Valley of Paradise.



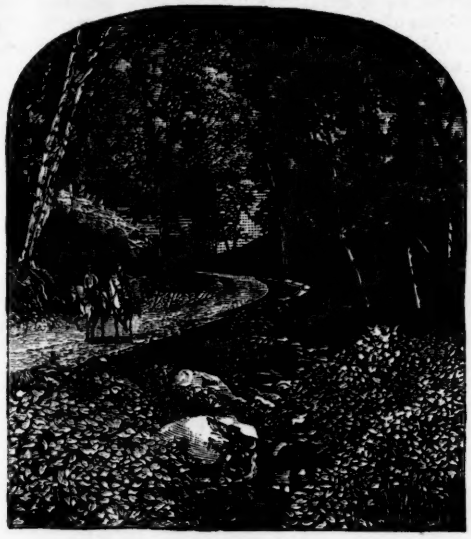
THE SPOUTING ROCK.

Short excursions can be made to Fort Adams, to the United States Training Ship and to Jamestown. On the way to the Fort, Lime Rock Light is passed in the upper part of the harbor near the shore on the rock of the same name, and the



FORT DUMPLINGS.

keeper of the light is Ida (Wilson) Lewis, a brave woman who has acquired a national reputation for the daring manner in which at various times



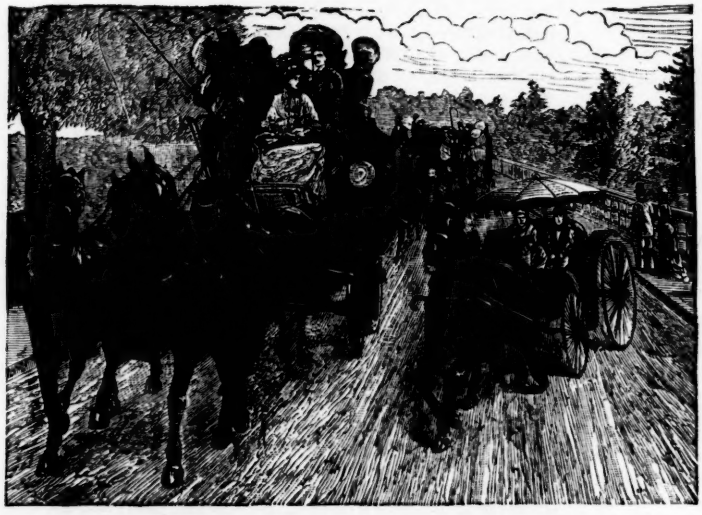
THE GLEN.

she has rescued persons from drowning. The Fort is an immense structure, the parade ground in the interior covering no less than eleven acres, and there is an extensive redoubt to the south. The United States Training Ship "New Hampshire" is moored off the southern end of Coaster's Harbor Island, which lies along the shore at the north of the harbor and city. The large white building on the slope of the hill is the War College.

The Torpedo Station is on Goat Island. Strangers are not allowed on the island, as the work of the station is the construction of and experimenting with sub-marine projectiles.

The finest harbor excursion is over to Jamestown on Conanicut Island by the steam ferry boat.

With a climate for mildness and equableness unsurpassed on the Atlantic coast, a purity of atmosphere resulting from the close proximity of the ocean, a good water supply, a fine system of sewerage, broad avenues, beautiful homes, an old historic town, a magnificent harbor, the city ought to continue to be a favorite and fashionable summer resort, and with all these advantages should develop in other lines as well.



THE GRAND DRIVE—BELLEVUE AVENUE

LAND'S END.

POINTS OF INTEREST.

Almy's Pond, near Bailey's Beach, north.
Bailey's Beach, end of Bellevue ave.
Black Rock, near Brenton's Point.
Block Island (see advertisement, page 23).
Brenton's Point, the most southerly extremity of the Island, off Ocean ave.
Bull House (oldest in Newport) Spring St., short distance from Washington Square.
City Hall, foot Washington Square, Thames St.
Channing Memorial Church, Pelham, opposite Touro Park.
Channing House (old), Thames Street.
Children's Home, 24 School.
Casino, 129 Bellevue Ave.
Coddington School.
Castle Hill, western extremity of peninsula, overlooking main entrance to Narragansett Bay.
Coggeshall Ledge, at end of Ledge Road.
Castle Hill Point, northern point of Castle Hill.
County Jail, 13 Marlborough.
Cherry Neck, Ocean road, just beyond Lily Pond.
Cliff Walk, from Easton's to Bailey's Beach.
Easton Beach, end Bath road.
Easton Pond, north of Easton Beach.
Fort Adams, entrance harbor.
Fort Greene, on harbor, end Washington.
Fort Walcott, near Fort Greene.
Forty Steps, end Narragansett ave.
Friend's Meeting House, Farewell and Marlboro.
Gooseberry Island, off Cherry Neck.
Goat Island, in harbor.
Halidon Hill, overlooking harbor from south.
Hanging Rocks, back of Sachuest Beach.
High School, Church.
Happy Valley of Paradise, nr. Happy Rocks.
Industrial School for Girls, Broadway.
Jewish Synagogue, Touro, near Washington Square.
Jewish Cemetery, eastern corner of Kay St. and Bellevue Ave.
Lawton's Valley, about six miles north, on west shore of Island.
Liberty Tree, Liberty Square, junction of Warner, Farewell and Thames.
Land's End, near end of Ledge road, overlooking Bailey's Beach.
Lily Pond, west of Almy's Pond and Bailey's Beach.
Lime Rock (and Lighthouse) in south part of harbor.
Mason's Hall, corner Church and School.

Music Hall, Bellevue, Ave., between Casino and Ocean House.
Miantonomi Hill, an elevation 150 feet in height, a mile and a half north of Washington Square.
Newport Artillery Armory, Clark.
Newport Historical Society Building, next above Jewish Synagogue on Touro.
Newport Reading Room, cor. Church St. and Bellevue Ave.
Newport Hospital, 16 Howard Ave. and Friendship St.
Opera House, Washington Square.
Old Stone Mill, Touro Park.
Ochre Point, off Marine and Ruggles Aves.
Perry Statues: Com. Oliver Hazard Perry, Washington Square; Com. M. C. Perry, Touro Park.
Parade, Washington Square.
People's Free Library, 260 Thames.
Polo Grounds, north end Thames.
Price's Neck, Ocean Road, beyond Cherry Neck, U. S. Life Saving Station at its extremity.
Purgatory, on Cliffs west of Sachuest Beach.
Rough Point, off F. W. Vanderbilt's house, Bellevue Ave.
Rocky Farm Gully, off Ocean road, south from Lily Pond.
Ragged Point, the southern point of Castle Hill.
Ramshead, Castle Hill.
Redwood Library, Bellevue Ave., near Touro Park.
Sachuest Beach, beyond Easton's Beach.
St. Mary's Church (R. C.), corner of Levins and Spring.
State House, head Washington Square.
Sheep Point, Cliffs off Yznaga Ave.
Sporting Rock, west of Bailey's Beach.
Telegraph Hill, Beacon Road, about five miles south of Washington Square.
The Glen, about six miles north, on east shore of Island.
Touro Park, Bellevue Ave, Pelham and Mill.
Trinity Church, Spring, corner Church,
United Congregational Church, corner Pelham and Spring.
U. S. Custom House and Post Office, cor. Thames and Franklin.
U. S. Engineer's office.
U. S. Torpedo Station, Goat Island.
U. S. Naval Training Station, including Training Ship "New Hampshire," and the War College, on Coaster's Harbor Island.
Vernon House (old), corner Clark and Mary.
Water Works, Pumping Station, north shore Easton's Pond.
Washington Square, Thames and Touro.
Whitehall, back of Happy Valley, ancient residence of Bishop Berkley.

MISCELLANY.

TREATMENT OF GOUT.—Apropos of the action of medicaments against gout, the following was communicated by Professor Brown-Séquard to the Biological Society, of Paris:

The remedy so well known under the name of Laville sometimes succeeds marvelously in gout, as may be testified by the following examples which came under my observation.

Fleury, former Agrégé of the Faculty, author of several works on hydropathy, was seized with an attack of complete paralysis of the right side, with anæsthesia and aphasia. Some precursory symptoms manifested themselves the day before, he had recommended for the case, in which the patient could neither speak nor write, that a strong dose of the Liquer de Laville should be given. Two hours after the paralytic symptoms disappeared.

Le Practicien remarks that cases of this kind, which are not rare, show the happy influence of anti-gouty remedies in the accidents of visceral gout, the development of which was formerly attributed to the action itself of these medicaments, without taking into account that the cases of gout going to the brain, to the heart, to the stomach, are nothing else than cases of gastric or cerebral uræmia, of fatty degeneration of the heart, caused by gouty lesions of the kidneys and of the heart. The surest means of preventing these accidents is, according to the best modern observers, the adoption of the anti-gouty medication at the proper time.

In his "Treatise on Gout," Dr. Lecorché thus formulated his opinion on the subject: "It is an error that the generality of physicians, too confident in ancient precepts, content themselves, in the presence of gouty manifestations, to advise expectation, one should not hesitate to combat them. Such at least has always been our rule, and we have never had any accidents to deplore. We are even convinced that it is dangerous to act otherwise. In respecting these manifestations, in allowing them to follow the regular course of their evolution, one facilitates not only the appearance of local lesions often irremediable, we leave to the diathesis the time and the facility to evolve and to lead patients fatally to a state of cachexia, whereas by an energetic medication, properly employed, the progress of the malady is checked, if it does not lead to cure."

The success obtained by Dr. Lecorché in hospital as well as private practice, is due to the judicious employment of the specifics of gout. The observations consigned in the "Treatise on Gout" leave no doubt whatever on the subject.

Extract of Case xcix (page 380): "Articular gout with multiple attacks. G., aged 60 years. The patient had tried every species of medication, with results more or less satisfactory, but of all the medications, that which succeeded the best, and which succeeded in insignificant doses is the Liqueur Laville, and it did not produce in the patient either perspiration or diarrhœa. He had scarcely taken the medicine, when he experienced an internal sensation which indicated that it was going to act on the part affected."

Extract of Case lxxv (page 532): "Gouty cephalalgia cured by the Liqueur de Laville. G., aged 40 years. Several gouty members in his family, both on the paternal and maternal side. According to the patient's statement, he never had any true attacks of articular gout. Now and then, he felt, in a transitory manner, pains in the toes. They were the only manifestations which he had commonly, with frequent attacks of migraine, till the year 1881. In 1881 he was seized with an atrocious cephalalgia, localized at the back of the neck, and which he said was altogether distinct from migraine. This cephalalgia, particularly marked at night, and which resisted every medication, even specific, and which yielded, and that in a manner almost instantaneous, only to the use of the Liqueur Laville. In the Spring of 1882, he had a fresh return of this pain, localized at the level of the eyebrows, which this time also could only be dissipated by the Liqueur Laville."—*Extract from "Treatise on Gout," by Dr. Lecorché.*

MEDICAL NUMISMATICS—Dr. Horatio R. Storer, of Newport, R. I., who has for several years been making researches in medical numismatics, will be glad of the aid of the profession in this direction and will give due credit for all information of the kind. Dr. S. has thus far published the following papers upon the subject: "The Medals, Jetons and Tokens Illustrative of Midwifery and the Diseases of Women"—*New England Medical Monthly*, November, December, 1886; "The Medals, Jetons and Tokens Illustrative of Sanitation"—*The Sanitarian*, May, July, August, October, 1887, February, April, July, August, November, 1888, February, March, April, 1889 (not yet completed); "The Goethe Medals"—*Amer. Journal of Numismatics*, October, 1887, January, 1888; "The Medals of Guislain"—*Medico-Legal Journal*, December, 1887; "Les Médailles de la Princesse Charlotte d'Angleterre, Prémiere Femme du Roi Leopold 1er de Belgique"—*Révue belge de numismatique*, January, 1888; "The Medals of St. Charles Borromeo, Cardinal, Archbishop of Milan"—*Amer. Journal of Numismatics*, July, October, 1888; "The Medals, Jetons, and Tokens Illustrative of the Science of Medicine"—*Ibid.*, January, April, 1889 (to be continued). He will present a paper upon "The Medals of Benjamin Rush, Obstetrician," at the coming meeting of the American Medical Association.

THE MITCHELL (IND.) DISTRICT MEDICAL SOCIETY will meet at West Baden, Ind., Thursday and Friday, June 13 and 14, 1889. Papers of interest to the entire profession will be presented at the meeting. Reduced rates on railroads have been secured. Special hotel rates.